

*Implementing Partners*

# **REPRESENTATIVE NATIONAL NUTRITION SURVEY TAJIKISTAN**

**(Sughd, RRS, Kouliab and Kurgan Teppe Regions)**

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## ACRONYMS AND DEFINITION OF TERMS

AAH/UK:	Action Against Hunger United Kingdom
AKF:	Aga Khan Foundation
BMI:	Body Mass Index
CARE:	Care International in Tajikistan
CSB/	
WSB:	Corn Soy Blend/Wheat Soy Blend
GBAO:	Gorno Badakshon Autonomous Oblast
HDI:	Human Development Index
HFS:	Household Food Security
IFRC:	International Federation of the Red Cross and Red Crescent Societies
IP:	Implementing Partners
MSF-H:	Medecins sans Frontieres – Holland
MUAC:	Mid Upper Arm Circumference
NNS:	National Nutrition Survey
RCST:	Red Crescent Society of Tajikistan
RRS:	Region of Republican Subordination
SCF-USA:	Save the Children USA
SSA:	State Statistical Agency
UNDP:	United Nations Development Program
USAID:	United States Agency for International Development
WFP:	United Nations World Food Program

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Hukumat:	term for local government municipality
Jamoat:	government body subordinate to Hukumat
Mahalla:	neighborhood body subordinate to Jamoat
Leninabad:	region renamed ‘Sughd’, but referred to as Leninabad in NNS 1999/2000.
Region:	administrative divisions also known as ‘oblasts’.

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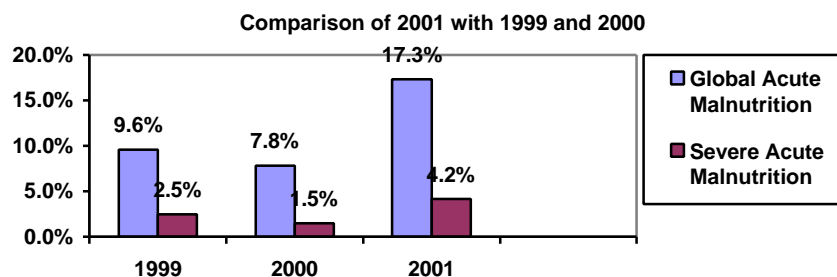
## EXECUTIVE SUMMARY

The National Nutrition Survey (NNS) 2001 was a collaborative work, conducted from 24<sup>th</sup> October and 16<sup>th</sup> November 2001, and involved 10 organizations led by CARE International Tajikistan . It complements 2 previous National Nutrition Surveys conducted in Sept/Oct 2000 and Sept/Oct 1999. The survey combined an analysis of the nutritional situation of children aged 6-59 months and their caregivers in four distinct regions of the country with a causal analysis assessing the relative importance of factors known to affect acute malnutrition. The four administrative regions of Tajikistan selected for the survey were: Kurgan Teppe Region, West Khatlon; Kouliab Region, East Khatlon; Republic Rayon Subordination (RRS) Region; Sughd Region. All comparisons in this report are related to these four regions. The standard two-stage cluster sampling methodology was used to randomly select 30 children from 30 clusters in each survey region. Focus group discussions complemented the quantitative survey. In each cluster 7-10 people who represented a cross-section of the community participated in these discussions.

Specifically, the survey 1), evaluated the rates of malnutrition among children aged 6 to 59 months; 2) assessed the nutritional status of the primary caregivers of these same children; 3) identified variations in malnutrition and influencing factors between the 4 administrative regions of Tajikistan; 4) assessed the relative importance of different factors which cause acute malnutrition of children and their caregivers, and 5) made relevant comparisons between the present survey and the National Nutrition Surveys of 2000 and 1999 where possible. It is intended that the information will be used by the international development community and the government of Tajikistan to direct efforts for urgent nutritional rehabilitation .

Results provide evidence of a worsening situation in all regions, with Kurgan Teppe region demonstrating the most significant increase since 1999 in severe acute malnutrition, and Sughd region showing the highest prevalence of chronic malnutrition. The trend shows steadily increasing malnutrition over the course of three survey periods, as can be seen in the figure below. Global acute malnutrition in RRS is 16.1%, Sughd 15.4%, Kurgan-Teppe, Khatlon 20%, and Kouliab Khatlon at 17.6%. The overall rate for global acute malnutrition is 17.3%. Overall severe acute malnutrition was in 4.2% of the target group.

### Comparison of acute malnutrition (wasting) in 1999, 2000 and 2001 NNS Tajikistan



Chronic malnutrition overall was 33% in RRS, 44% in Sughd, 37% in Kurgan-Teppe, and 35% in Kouliab. Collectively, this is a rate of 37% global chronic malnutrition for 2001. This reflects an increase in stunting (chronic malnutrition) over the last 2 years: 35.9% was reported in 2000 and 35.3% in 1999.

The analysis of data taken from primary caregivers also testifies to a poor nutritional state. Regionally, there were no significant differences. RRS registered 11%, Sughd 10%, Kurgan-Teppe 10%, and Kouliab 8%, for an overall rate of 10%. The continuing high rates of malnutrition amongst caregivers in all areas are of concern and suggest that this is a vulnerable group whose nutritional status continues to be compromised.

*The AAH bi-variate analysis found that:*

- In each region, the 6-29 month age group had higher rates of malnutrition and had almost double the risk of developing malnutrition than children aged 30-59 months. This finding differs somewhat from the findings in year 2000, wherein children 6-29 months were at 5.66 times greater risk for malnutrition than those aged 30-59 months. This indicates that there has been an important increase this year in malnutrition in the 30-59 month age group, suggesting that while the issues of poor infant feeding and weaning practices and infectious diseases are still a major cause of malnutrition, the problems are being compounded by a worsening food security situation. Simply stated, children routinely are not getting enough food to eat;
- Women who are pregnant/lactating face a higher risk of malnutrition than those not pregnant or lactating;
- Early cessation of breastfeeding and early introduction of weaning foods continue to be important factors in child malnutrition. A problem of late weaning also persists as caregivers delay the introduction of additional foods to infants beyond the period in which they can be adequately nourished by breast milk alone;
- Fever (not interpreted any further than this, but associated with malaria and /or diarrhea) was the most prevalent disease symptom reported for children surveyed, closely followed by diarrhea and then cough;

*The Tulane multivariate analysis “controlled” for the influence of multiple causal factors. It progressively eliminated factors of effect, leaving only the most critical. The analysis drew a profile of the child most at risk:*

- Chronic malnutrition (<- 2z) is most likely among children who live in Sughd, eat dairy products less than once per week, parent works on a kolkhoz, have had one episode of any of the illnesses on the questionnaire in the past month, and who live in rural areas;
- Children’s weight for age: Malnutrition (<- 2z) is most likely among children who live in Kulyab, more likely among those who live in KT or Sugd than those in RRS, and is more likely among those who have dairy products less than once per week, and those who have had one episode of illness in the past month;
- Children’s height for weight (acute): Malnutrition is most likely among children who had two episodes of illness (of any illness on the list), families who are eating less than 3 meals per day, and those working on a kolkhoz. Children who have never been breastfed had four times the risk of low weight for height.

*Tulane multi-variate analysis also drew a profile of the primary caregivers:*

- Women who do not work outside the home and who have had 1 to 3 episodes of illness were at risk of malnutrition;
- Women without husbands were only at slightly more risk than those who have husbands at home, and those whose husbands have migrated were at less risk;
- Surprisingly, women who have less than 3 children and who live in households of less than 6 people were at higher risk than those with more children or who live in larger households.

*Both the bi-variate and multi-variate analyses found other associations:*

- There is more chronic malnutrition among families who had access to land to cultivate in 2001 than those who did not have access to land;
- The pattern of dairy consumption was the only food category that emerged as significant;



- Having a woman with low MUAC (<22cm) is related to the child's lower height for age or weight for age or weight for height. This was highly significant in all three indicating that both the woman and children are suffering the same factors leading to malnutrition;
- Families who are selling assets to buy food are more likely to have children with low weight for age;
- Families with access to land but no irrigation or malfunctioning irrigation were at higher risk for acute malnutrition among children;
- While a relationship was found between women who are currently breastfeeding and low MUAC, care must be taken not to infer that lactation causes malnutrition. In the Tajik context, women are probably not getting the additional calories needed during lactation;
- Household Food Security (HFS) is affected by diminishing agricultural yields as a result of recurrent drought; further collapse of irrigation structure or lack of repair to irrigation systems; deterioration in seed quality, increased migration of household members in search of work, increasing unemployment, exhaustion of coping mechanisms, collapse of family support networks, and depletion of productive (including livestock) and non-productive assets. Poor households are finding it increasingly difficult to bridge the gap when harvests are poor and sources of alternative cash income are not available.

*The conclusions that can be drawn are cross-sectoral, and lend weight to the importance of developing an integrated response:*

- The rates of malnutrition in all regions, amongst both children 6–59 months and their caregivers show a very worrying nutritional situation. In particular, the rates of severe malnutrition are extremely alarming and represent a significant deterioration in acute nutritional status over the course of three years;
- Breast-feeding practices, poor weaning and infant-feeding practices and diarrhea disease associated with contaminated water sources continue to be major contributing factors to acute malnutrition in young children. However, the effect of food insecurity on malnutrition has become much more significant. The number of children above weaning/breast-feeding age suffering from acute malnutrition has significantly increased since the last 2 national surveys, corroborating this conclusion;
- While access to land did not appear as a factor in itself to acute or global malnutrition, it is a concern that families who are planting have children who have not had adequate food over time for proper growth (chronic malnutrition). The role of irrigation is shown to be important for rural families to have adequate food in 2001;
- Women who work away from home have better nutritional status. This may be due to increased income for the family, cash income, or some access to food in the workplace;
- Size of household may actually be a protective factor in that the extended families are supporting each other and thus, improving some food security;
- Humanitarian assistance programs do not appear to be having a wide-reaching impact on the most vulnerable groups at risk for malnutrition, or indeed those suffering from acute malnutrition. Although around a quarter of the surveyed population was in receipt of some quantity of food aid, the amounts of food that are received may be insufficient, due to possible deviations in the distribution pipeline at the jamoat and community level. There is concern that the quality of currently distributed rations may be inadequate in both caloric value and composition.

*The following recommendations are contingent upon joint review by the participating agencies, and may require more specification by geographical delineation:*

- Continuation, improvement and expansion of nationwide program (government, NGO and UN) to improve infant feeding practices. These should promote the following important messages about breast-feeding and weaning: exclusive breast-feeding to approximately 6 months of age; continued breast-

feeding after 6 months until 2 years of age, with complementary foods introduced at 6 months; meals should be provided 2-3 times per day for 6-8 month-old children, 3-4 times per day for 9-11 month-old children, and 4-5 meals per day for 12-23 month-old children. The types of food to be given to young children should also be promoted; energy dense foods need to increase in the diets of young children together with increased consumption of fruits and vegetables;

- Conduct a review of targets in the current food distribution programs, looking at vulnerability criteria and using the outcome of this report to adjust targets in consultation with all distribution partners;
- Institute a blanket complementary ration (CSB/WSBs) for under 5's and pregnant and lactating women to include in the currently distributed general ration, as proposed in the Oxfam Food Security Survey;
- Institute a blanket complementary ration (CSB/WSBs) for under 5's and pregnant and lactating women to include in the currently distributed general ration, as proposed in the Oxfam Food Security Survey. If blanket distribution is not feasible to all these groups, the program could be targeted to children aged 6-29 months as this is the most vulnerable group in terms of susceptibility to malnutrition, and to those pregnant and lactating mothers with low BMI (less than 18) and / or MUAC (less than 22cm).
- Pulses which are currently missing from the ration should be included in the future to ensure that the universal guidelines for food rations are followed (2100 kcals – 10-12% protein and  $\geq$  17% fat);
- Advocate for the development of a sustainable approach to supplementary and therapeutic feeding that will build the capacity of the current health system;
- Institute targeted nutrition education as an integral part of all food distribution and school feeding activities, as is currently being carried out by at least one NGO;
- Establish a nationwide surveillance system on the order of an 'Early Warning System' that will provide regular information on health, nutrition, food security, water, etc. Dissemination of this information will allow for timely response to changes in household food security, health and living conditions;
- Advocate for continued and intensified investigation of alternative and sustainable water and irrigation technologies, with the intention of improving access to clean water;
- Advocate an action-oriented review of factors affecting access to sufficient good quality land, with special focus on female heads of households;
- At the macro level, intensify efforts in the development of agricultural initiatives for local seed multiplication, alternative agricultural inputs, desalinization technologies, etc.;
- Host a presentation of the results for the relevant ministries and agencies, to advocate for more rapid policy development and application regarding Household and Livelihood Security initiatives.
- Conduct a pre-harvest survey (April/May 2002) to re-assess the food security status of the population at the end of the hunger gap. This survey may also include a mortality survey, as proposed but not executed in NNS 2001.

## **I. INTRODUCTION**

The National Nutrition Survey 2001 was a collaborative work, conducted from 24<sup>th</sup> October to 16<sup>th</sup> November 2001, and involved 10 organizations led by CARE International Tajikistan. It complements 2 previous NNS conducted in Sept/Oct 2000 and Sept/Oct 1999. The survey combined an analysis of the nutritional situation of children aged 6-59 months and their caregivers in four distinct regions of the country with a causal analysis assessing the relative importance of factors known to affect acute malnutrition.

The survey was funded by the United States Agency for International Development (USAID) and CARE Tajikistan. It was instigated and designed by CARE International Tajikistan. Training was conducted by CARE International Tajikistan, Action Against Hunger United Kingdom (AAH/UK), and the Aga Khan Foundation (AKF). AAH-UK was appointed the coordinating agency to assist in the implementation, interpret the results and disseminate the conclusions and recommendations of the survey. Data collection was conducted by 10 implementing partners: Action Against Hunger-UK (AAH-UK), the International Federation of the Red Cross and Red Crescent Societies (IFRC) in partnership with the Red Crescent Society of Tajikistan (RCST), Mission Ost, Medecins Sans Frontieres – Holland (MSF-H), Save the Children-USA (SCF-USA), Children's Aid Direct, Mercy Corps Tajikistan, CARE, the United Nations World Food Program (WFP) and the National Nutrition Institute of Tajikistan.

Results were analyzed simultaneously by AAH-UK and by Tulane University, New Orleans, USA. This report has some divergent data, choosing to put all the results at the disposition of the reader.

This survey was conducted as a follow up to previous surveys in 1999 and 2000, to examine the trend in nutritional status of the population. It was conducted slightly later than normal (September), partly due to the events of September 11<sup>th</sup>. A further survey has already been proposed for April/May 2002, at approximately the debut of the harvest.

## **II. BACKGROUND**

Tajikistan is a landlocked mountainous country of 143 100 sq km. Only 7% of the land is arable. The country gained independence in 1991 and is one of the poorest of the former republics of the Soviet Union. Prior to independence, the economy was heavily dependent on subsidies from Moscow and the intensive cultivation of cotton for export. Civil conflict started in 1992 and national reconciliation was only achieved in 1997. The poor state of the economy is such that the government has been unable to fund health and education facilities, pay salaries or allowances on a regular basis in recent years. Employment in 2001 was at 48% of 1991 levels and many professionals have emigrated to find work.

The United Nations Human Development Program (UNDP) Report for 2001 ranked Tajikistan 103 out of 162 countries in terms established by the Human Development Index (HDI). The World Bank estimates that 85% of the population of 6.34 million is living in poverty.

Tajikistan has experienced 2 successive years of drought. Inadequate rainfall during the past years has exacerbated the serious problems already encountered by the agricultural sector. Agricultural output has now fallen by 55% compared with 1991, marking a significant decline in productivity

### **A. Survey Regions**

Four administrative regions of Tajikistan were selected for the survey: Kurgan Teppe Region, West Khatlon; Kouliab Region, East Khatlon; Republic Rayon Subordination (RRS) Region; Sughd Region. All comparisons in this report are related to these four regions.

Khatlon Oblast is inhabited by roughly 34% of the country's population. It has the largest percentage of arable land and largest area planted to food crops in the country. Khatlon is characterized by mostly lowland areas. It is heavily dependent on irrigation for agricultural production.

RRS region includes the capital city of Dushanbe and approximately 31% of the total population resides in the region. It also includes the remote mountainous rural area of the Rasht Valley.

Sughd region accounts for about 30% of the population. This year 22% of the country's wheat was planted in the region. Historically Sughd has been economically better off than other regions due to the presence of many industries. However, much of the industrial sector is now in decline, and alternative employment opportunities are not developing.

The remainder of Tajikistan's population lives in the Gorno-Badkhashan region. The survey was not conducted there due to inaccessibility. The Aga Khan Foundation (AKF) is working in this region and recently conducted a comparative nutrition survey, the results of which will be published independently.

#### B. Survey Goals and Objectives

The survey goal was assess the nutritional status of children aged from 6 to 59 months old and their caregivers in 4 administrative regions of Tajikistan and to conduct a causal analysis of the current situation to provide insights into specific factors causing malnutrition in each of the 4 regions. The specific objectives of the survey were to:

- To evaluate the rates of malnutrition of children aged 6-59 months;
- To evaluate the nutritional status of the primary caregivers of these same children;
- To identify variations in malnutrition and influencing factors among the 4 administrative regions of Tajikistan;
- To assess the relative importance of different factors that cause acute malnutrition of children and their caregivers;
- To make relevant comparisons between the present survey and the National Nutrition Surveys of 2000 and 1999 where possible.

### III. **METHODOLOGY**

#### A. Overview

A two-stage cluster sampling methodology was used to randomly select 30 children from 30 clusters in each survey region. A sample greater than, or equal to 900, allows for statistical significance within 95% confidence. Clusters were selected randomly using population figures obtained from Implementing Partners (IP) of the Sept/Oct 2000 NNS, which had been confirmed with local government entities (Hukumat), and the State Statistical Agency (SSA) in Dushanbe in the previous year. Children from 6- 59 months of age were selected to represent the age group most vulnerable to disease and malnutrition and resultant morbidity and mortality. Mothers or primary care givers of these selected children were also measured and interviewed using a structured questionnaire designed by CARE<sup>1</sup> to assess household food security issues, child feeding practices and morbidity information.

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<sup>1</sup> CARE compiled the final questionnaire from samples of the 1999, 2000 NNS and the AKF Gorno-Badakshan format.

## B. Mapping and Logistics

Four administrative areas were included for nutritional surveillance. Each District and Jamoat is listed in the annexes for each administrative area. The Sughd (Leninabad) Region is the northern-most region of Tajikistan, and includes the Ferghana and Zerafshan valleys. It borders on Uzbekistan. Regions under the Republican Subordination include Dushanbe city, the peri-urban areas and the remote Rasht (former Karetegin) Valley. The western-most districts of the Khatlon region are administered by Kurghan Teppe city, and the eastern most districts of the Khatlon region are administered by Kouliab city.

A total of 17 teams (four people in each team) were deployed by the IP coordinating body. One *Survey Team Leader* conducted one focus group discussion in each cluster and supervised two anthropometric data collection field workers and one *Interviewer* who carried out household interviews.

## C. Survey Training

The survey teams were generally appointed locally by agencies working in each survey area and for this reason the trainers went to these areas to conduct training of all team members. Two teams of trainers were responsible for this training. This arrangement was not ideal but was unavoidable due to time constraints, the number of trainees and the distances between survey areas.

17 Survey Team Leaders were trained over two days in Dushanbe on the responsibilities of a team leader and team member, the methodology to be used in the survey, how to take anthropometric measurements, how to conduct interviews, and focus group discussions.

Team members were trained simultaneously during four separate two-day trainings in how to take anthropometric measures and conduct interviews. In addition, field practice was conducted on a separate day to test the team members' capabilities.

## D. Survey Sample Selection

The standard two-stage cluster sampling methodology was used to randomly select 30 children from 30 clusters in each survey region. Focus group discussions complemented the quantitative survey. In each cluster 7-10 people who represented a cross-section of the community participated.

For the purposes of the survey the "household" was defined as all of the people living and eating in the same house and a "family" was defined as a mother and all of her children. If there were 2 or more families in any one household with children in the eligible age group, one family was chosen using the random number table.

One child between 6 and 59 months was then selected at random from the chosen family by numbering all the eligible children and using the random number table to select one. In the case where one or more children were temporarily absent, that child was, nevertheless included in the choice. If this child was chosen and was absent, an appointment was given to the parents for a second visit. If the child was still not present after the second visit, another child was chosen at random from another family, for inclusion in the survey. A set of methodology guidelines that were used by the teams can be found in the annexes.

## E. Data Parameters

The survey identified specific data parameters to be collected. They included:

- Age
- Gender
- Weight/Height
- Measurement of Upper Arm Circumference (MUAC) for caregivers only

The nutritional indices used are universally recognized standards of measure<sup>2</sup> that define the categories of malnutrition. They include:

- Weight for height to detect acute malnutrition (*wasting*);
- Height for age to detect chronic malnutrition (*stunting*);
- Body Mass Index (BMI) for mothers to assess adult women<sup>3</sup>.

For a more in-depth discussion of the data parameters, please consult annex 4.

## F. Survey Tools: Questionnaire and Focus Group Discussion Guides

The questionnaire for the causal analysis was adapted from earlier versions of 1999, 2000 and input from the Oxfam HFS tool. This questionnaire was used to interview the primary care giver of each child, who was also the woman whose nutritional status was assessed using MUAC. A copy can be found in the annexes.

The focus group discussion guide was essentially a series of questions that corroborated the quantitative tool. The purpose of the group discussion exercise was to gather additional information about the food security situation and its affect on people in each village.

The focus group discussion was usually carried out at the end of the day or as a final commitment before teams left cluster villages. Participants in these discussions numbered roughly 7 to 10 people who represented a cross section of the community as a whole, such as farmers, teachers, nurses and traders.

## G. Data Analysis

The framework for data analysis was based on a cross-tabulation (single and multi-variate) that assessed standard relationships between data sets. Two units<sup>4</sup> were at work on the data analysis simultaneously in order to confirm the accuracy of process and results. Data processing and analysis was conducted using the EPI-INFO Software package<sup>5</sup>. Calculation and analysis of anthropometric indicators was conducted using the EPINUT program of the EPI Info 6 software package<sup>6</sup>. Graphic representations of the data were formed in MICROSOFT 'Excel'. 136 records were excluded from the total due to errors in calculation. This margin of error is considered within the acceptable range.

Causal analysis data was also analyzed in EPI-INFO. Results are presented as frequencies in percentages and with Relative Risk and chi squared analyses, together with qualitative analyses.

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<sup>2</sup> National Center for Health Statistics (1977): NCHS growth curves for children 0-18 years, USA. Vital Health Statistics. 165, 11-74.

<sup>3</sup> This indice could not be measured in the frame of the survey – see below in H. 2. Anthropometric measurement for adult.

<sup>4</sup> AAH survey nutritionist, and Tulane University School of Public Health Nutrition Division.

<sup>5</sup> Epi Info version 5.01b October 1991, Centers for Disease Control, Epidemiology program office, Atlanta, Georgia, USA.

<sup>6</sup> *Epi Info 6 Version 6.04b to c Upgrade – October 1997, Centers for Disease Control & Prevention, USA, WHO, Geneva, Switzerland.*

## H. Modifications, Constraints, and Limitations

### 1. Sampling selection

In 6 cases, villages were reselected, as names of villages from the population lists were not found in the Jamoat selected. Replacement clusters were chosen using a random number table and selecting directly from the clusters as listed in their geographic zone lists.

### 2. Anthropometric measurement for adults

The equipment for weighing female adults was not available for the survey. The measurement of adult weight could therefore not be accurately recorded, although height measurements were performed on all caregivers. Hence it was not possible to calculate BMI of adults as had originally been intended.

### 3. Anthropometric measurements for children

Cold weather made it difficult in some areas to completely remove a child's clothing. Team leaders made an adjustment to child weights according to their estimation of the weight of a child's clothes, generally overestimating the weight of the child's clothes, resulting in a small reduction in the actual weight reported for many children. This may have caused an increase in the numbers of malnourished children and therefore caution is advised in interpretation of the figures. This issue was particularly prevalent in the KT and Kouliab regions. The authors feel that this problem is associated with the limited time allocated to training survey teams, and non-uniformity of pre-survey training.

There appeared to be a significant gender bias in the selection of children for measurement, despite the careful attention to random selection during training. Opinion is that it is culturally based, as male children are considered more important. Family members may have presented only the male children, and/or surveyors (the majority of whom were men) may have overridden the random selection exercise to choose male children.

### 4. Survey questionnaire

The survey questionnaire required respondents to sit for 15-20 minutes and answer a multitude of queries on issues pertinent to the household. It was a time-consuming component of the survey for both interviewers and respondents. Due to problems of translation and misinterpretation, 3 questions had to be removed from the analyses.

### 5. Focus Group Discussions

The focus group discussions did not yield as much information as was anticipated, since teams generally misunderstood the training and often carried out the discussion as if using a prepared questionnaire. In addition, the heavy volume of work for teams in each cluster was also felt to be very demanding and as the last activity of the day, the quality of the FGD seems to have suffered from this.

## IV. **RESULTS OF THE ANTHROPOMETRIC SURVEY**

Only those statistically significant relationships between the different indicators (including the household questionnaire) are reported, due to the large amount of data collected.

Chronic malnutrition ( $<- 2z$ ) is most likely among children who live in Sughd, eat dairy products less than once per week, parent works on a kolkhoz, have had one episode of any of the illnesses on the questionnaire in the past month, and who live in rural areas.

According to the measure of children's weight for age, malnutrition ( $< -2z$ ) is most likely among children who live in Kulyab, more likely among those who live in KT or Sugd than those in RRS and is more likely among those who have dairy products less than once per week, and those who have had one episode of illness in the past month.

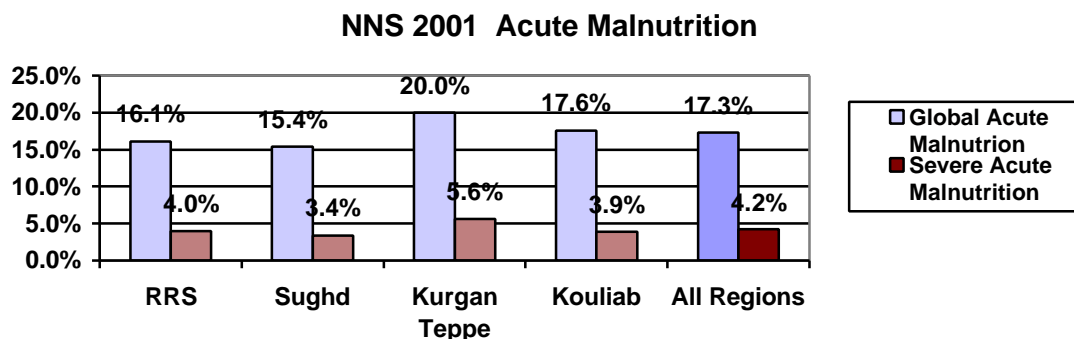
Children's height for weight measuring acute malnutrition is most likely among children who had two episodes of illness (of any illness on the list), families who are eating less than 3 meals per day, and those working on a kolkhoz. Children who have never been breastfed had four times the risk of low weight for height.

Please see Annex 4 for definitions of acute and chronic malnutrition and for parameters of malnutrition. 'Acute' malnutrition (also referred to as 'wasting') refers to low weight-for-height and 'chronic' malnutrition (also referred to as 'stunting') refers to low height-for-age, as measured by international standards. It is internationally accepted that all children under 5 will grow the same if given adequate nutrition.

#### A. Acute Malnutrition Oct/Nov 2001 (Z-score analysis)

Global Acute Malnutrition results ranged from 15.4% in Sughd to 20.0% in Kurgan-Teppe, but no statistically significant differences can be construed between the regions, as all the confidence intervals overlap. Whilst the figure reported shows the percentage of malnutrition found in the sample studied, the confidence interval shows the limits within which it is 95% confident that it is representative of the true population rate for malnutrition. Therefore it can be assumed for all regions that the true level of malnutrition in the population is between 15.4% and 19.2%. Global malnutrition includes both moderate and severe malnutrition. The severe malnutrition is a subset of the global rates.

Severe Acute Malnutrition results ranged from 3.4 % in Sughd to 5.6% in Kurgan Teppe. As with global malnutrition, no statistically significant differences in severe malnutrition are present between regions.



**Table 1: Acute malnutrition all regions using z-score analysis**

Region	No. Child	Global Acute Malnutrition		Severe Acute Malnutrition	
		%	CI	%	CI
RRS	944	16.1	11.9-20.3	4.0	2.3-5.8
Sughd	908	15.4	11.8-19.0	3.4	2.1-4.8
Kurgan-Teppe Khatlon	931	20.0	16.2-23.8	5.6	3.8-7.3
Kouliab Khatlon	921	17.6	14.0-21.2	3.9	2.3-5.5
All Regions	3704	17.3	15.4-19.2	4.2	3.4-5.1



It is difficult to make comparisons with the 2000 National Nutrition Survey as the regions were geographically delineated differently last year and are not the same. However a direct comparison with the 1999 survey is possible and reveals that there are no significant differences in the malnutrition rates this year in any region apart from the Kurgan Teppe region.

In 1999 Khatlon was not divided into the separate regions of Kurgan Teppe and Kouliab but a comparison of Kurgan Teppe 2001 with Khatlon 1999, and a separate comparison of combined results of Kurgan Teppe and Kouliab 2001 with Khatlon 1999 both revealed a statistical difference in malnutrition rate to show an increase this year.

In summary the trend is toward increasing malnutrition and a demonstrably worsening situation from 2 years ago. Rates in Kurgan Teppe region have increased the most since 1999, but this year all areas are seen to be suffering equally from high rates of child malnutrition.

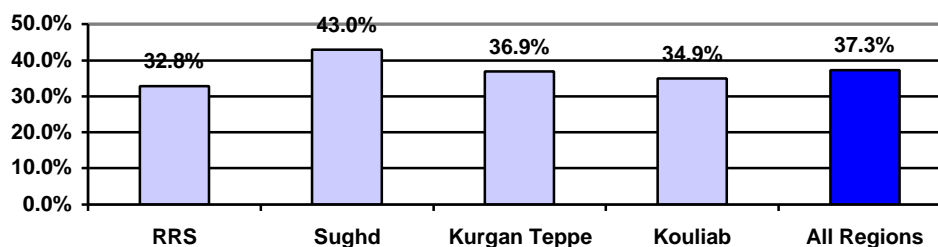
#### B. Chronic Malnutrition Oct/Nov 2001 (Z-score analysis)

Chronic malnutrition reflects an indicator of height for age and is a measure of short stature or stunting of the child. Stunted children have been malnourished in the past and have not achieved their full growth potential, as they would have done without some adverse conditions when they were younger. These children are at a disadvantage and will be unable to make up this loss of growth later in life no matter how much their living conditions improve. However, stunting in children aged 0-3 years can be reversed if adequate nutrition is given to the child. Whilst acute malnutrition is more common amongst the younger age group (0-29 months), this is not the case for chronic malnutrition (stunting), which is cumulative over time.

The Sughd region shows the highest prevalence of stunted children and a statistically significant higher rate of stunting than both the RRS and Kouliab regions. This suggests that in the recent past some adverse conditions existed in Sughd that were worse than in the other regions for child nutrition and growth. The reasons can only be speculated on and may have involved disease, poor feeding practices or inadequate food availability or accessibility or a combination of these and perhaps other factors.

The rates of stunting overall have not changed much in the last 2 years: 35.9% was reported in 2000 and 35.3% in 1999.

**NNS 2001 Chronic Malnutrition**

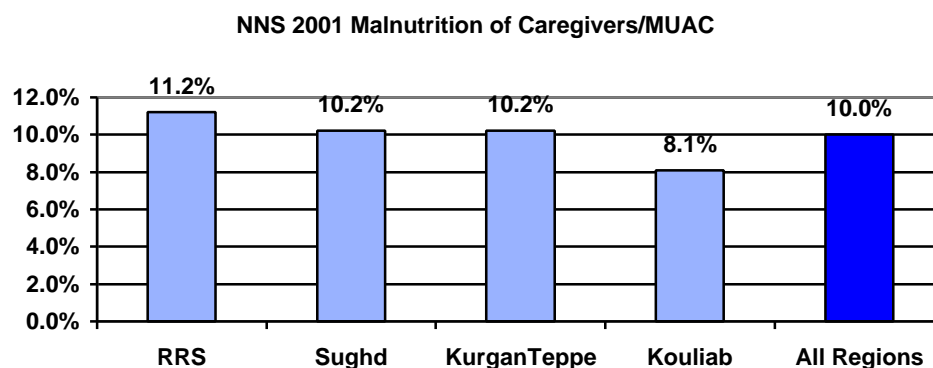


**Table 2: Chronic malnutrition all regions using z-score analysis**

Region	No. Children	Global Chronic Malnutrition	
		%	CI
RRS	944	32.8	28.2-37.5
Leninabad	894	43.8	39.6-48.1
Kurgan-Teppe	931	36.9	33.3-40.6
Kouliab	921	34.9	30.7-39.0
All Regions	3664	37.3	35.1-39.5

### C. MUAC Analysis of primary care givers

10% of all caregivers sampled are themselves considered malnourished. The highest rate of 11.2% was found in RRS region. There does not appear to be any significant difference between regions. The investigating partners found this trend to be cause for concern and warrants attention.



**Table 3: Malnutrition of caregivers using MUAC**

Region	No. Women	% MUAC <22.0	CI
RRS	943	11.2%	8.2-14.2
Leninabad	905	10.2%	8.1-12.3
Kurgan-Teppe	928	10.4%	7.7-13.1
Kouliab	916	8.1%	5.7-10.6
All Regions	3692*	10.0%	8.7-11.3

• 12 missing values were not included.

Other factors appear to be associated with women's nutritional status. Women who do not work outside the home and who have had 1 to 3 episodes of illness were at risk of malnutrition. Women without husbands were only at slightly more risk than those who have husbands at home, and those whose husbands have migrated were at less risk. Surprisingly, women who have less than 3 children and who live in households of less than 6 people were at higher risk than those with more children or who live in larger households.

### D. Comparison of pregnant/lactating caregivers with those not pregnant/lactating

Analyses were performed to examine any differences between rates of malnutrition in pregnant/lactating caregivers and those not. Ideally, the comparison would have looked at those in the third trimester of pregnancy and the first 6 months of lactation, as this is the group with higher nutritional and energy needs and therefore at higher risk of malnutrition if they are consuming a very poor diet. However, the data from the survey did not allow for distinguishing this group from other pregnant or lactating women, as the question was posed simply as a yes/no response to whether the respondent was pregnant or breastfeeding. As approximately three-quarters of caregivers continue to breast feed until the child is at least 12 months old, it is reasonable to assume that a significant proportion of those women will be included in any analyses of pregnant/lactating caregivers in this survey.

With the exception of the Sughd region, malnutrition rates for women who are not pregnant or lactating were found to be consistently lower than those for pregnant/lactating women. Analysis of the total sample confirms that women who are pregnant/lactating face a higher risk of malnutrition than those not pregnant or lactating.<sup>7</sup> These results are expected because of the increased energy requirements of pregnant/lactating women. They are a more vulnerable group and would be expected to exhibit symptoms of malnutrition in comparison with women who are not pregnant or breastfeeding, but exposed to the same deteriorating conditions. The relative risks to this group may be higher if it were possible to identify the women who are in the 3<sup>rd</sup> trimester of pregnancy or breastfeeding an infant less than 6 months, and compare them with the remainder of the caregiver sample.

#### E. Malnutrition Rates in Peri-Urban, Urban and Rural areas

An analysis of all regions combined revealed that households living in peri-urban areas had higher rates of malnutrition than those living in rural or urban areas. The distinction of areas into rural, peri-urban or urban was made at the discretion of the survey team for each cluster surveyed. Only 10% of the total sample was reported as living in a peri-urban area, but almost a quarter (23%) of those households were found to have a malnourished child. This compares with 16.5% in rural households with a malnourished child and 17% in urban households. This is likely to be illustrative of families between urban and rural regions who have little or no land or livestock but are equally not benefiting from any of the advantages of urban living such as trade and regular work.

### V. RESULTS BY REGION

#### A. Kurgan Teppe Region

A total sample of 931 children between the ages of 6 and 59 months was analyzed. In almost all age groups there is a higher percentage of boys than girls, with the overall figure showing 46.6% girls and 53.3% boys.

Children in the 6-29 month age group show a slightly higher rate of malnutrition than the rest of the sample. In this age group 124 children were found to be malnourished (89 moderate and 35 severe), compared to 69 children in the 30-59 month group (42 moderate and 27 severe). Statistical tests show that the risk of malnutrition is 1.64 times higher for the younger age group. This finding concurs with results of the 2000 survey, which found the 6-29 month age group to be at a much higher risk of malnutrition than the older group in all regions studied. The probable reasons for this finding are related to infant feeding practices. It is also important to stress that children aged 6-29 months are the most vulnerable as they have the highest nutritional requirements / kg body weight than any other group.

**Table 4: Kurgan Teppe global and severe acute malnutrition by age group (z-score)**

	6-59 months	6-29 months	30-59 months
Global acute malnutrition W/H <-2 Z-scores	20.0% (16.2-23.8)	23.9% (19.1-28.7)	14.6% (9.1-20.0)
Severe acute malnutrition W/H < -3 Z-scores	5.6% (3.8-7.3)	6.7% (4.2-9.2)	4.2% (1.5-6.9)

<sup>7</sup> RR=1.36, 95% confidence interval 1.1-1.67,  $\chi^2$  test=8.5, p=0.004).

Prevalence of malnutrition in the population using percentage of the median cut-offs confirm a worryingly high rate of wasting in the population. Severe malnutrition rates are alarming (but possible errors in the survey methodology could have overestimated this). Children of ages 6-29 months were found to be at a one and a half times greater risk of becoming malnourished than older children.

**Table 5: Kurgan Teppe global and severe acute malnutrition by age group (% median)**

	6-59 months	6-29 months	30-59 months
Global acute malnutrition W/H <80% of median	16.1% (12.7-19.5)	18.7% (14.3-23.1)	12.6% (7.5-17.7)
Severe acute malnutrition W/H < 70% of median	3.2% (2.0-4.4)	4.4% (2.5-6.3)	1.7% (0.4-3.0)

Chronic malnutrition appears endemic. The prevalence of stunting in the survey population is very high. This concurs with the findings of previous National Nutrition Surveys in Tajikistan. 931 children were included in the analysis of Height for Age (stunting).

**Table 6: Kurgan Teppe chronic malnutrition by age group**

	6-59 months	6-29 months	30-59 months
Global chronic malnutrition H/A <-2 Z-scores	36.9% (33.3-40.6)	33.9% (29.3-38.6)	41.5% (36.0-47.0)
Severe chronic malnutrition H/A < -3 Z-scores	15.7% (13.2-18.2)	14.6% (11.4-17.9)	17.3% (13.9-20.7)

The results show malnutrition in primary care givers to be significant. In 99% of cases the primary care giver was the mother of the child. The mean age of primary care givers was 29.7 years. Of the total sample 1 in 10 caregivers are malnourished. Prevalence of malnutrition among pregnant/lactating women is significantly higher than the non-pregnant, non-lactating group.

**Table 7: Kurgan Teppe malnutrition in caregivers**

	Pregnant/Lactating women	Non-pregnant/lactating women	All women
MUAC <22.0cm	12.3% (8.9-15.7)	7.2% (4.2-10.2)	10.4% (7.7-13.1)

## B. Kouliab Region

A total sample of 921 children between the ages of 6 and 59 months was analyzed. In almost all groups there are more boys than girls. Overall boys account for 53.4% of the sample with girls making up 46.6%.

**Table 8: Kouliab global and severe acute malnutrition by age group (z-score)**

	6-59 months	6-29 months	30-59 months
Global acute malnutrition W/H <-2 Z-scores	17.6% (14.0-21.2)	23.8% (18.7-29.0)	10.6% (7.4-13.7)
Severe acute malnutrition W/H < -3 Z-scores	3.9% (2.3-5.5)	6.5% (3.9-9.1)	1.1% (0.2-2.1)

It can be seen from the table that there is a large and statistically significant difference between prevalence of malnutrition in the 6-29 month age group and the 30-59 month group. This occurs in both global malnutrition and in the severely malnourished children.

Statistical tests revealed that a child of 6-29 months is twice as likely to be malnourished than a child of 30-59 months. This corresponds with the findings of the Kurgan Teppe survey and it is likely that the reasons for this are similar to those already mentioned.

Analysis using percentage of the median shows a similar relationship to that using z-score with children of 6-29 months being at a higher risk of malnutrition.

**Table 9: Kouliab global and severe acute malnutrition by age group (% of median)**

	6-59 months	6-29 months	30-59 months
Global acute malnutrition W/H <80% of median	12.9% (10.0-15.8)	17.4% (13.4 – 21.3)	8.3% (5.3-11.3)
Severe acute malnutrition W/H < 70% of median	1.6% (0.9-2.4)	2.9% (1.5-4.3)	0.2% (0.0 – 0.7)

921 children were included in the analysis of Height for Age (stunting). Over a third of children are not achieving their full growth potential and are stunted. This proportion is very similar to that of the Kurgan Teppe region.

**Table 10: Kouliab chronic malnutrition by age group**

	6-59 months	6-29 months	30-59 months
Global chronic malnutrition H/A <-2 Z- scores	34.9% (30.7-39.0)	30.5% (25.8-35.2)	40.0% (33.8- 46.2)
Severe chronic malnutrition H/A < -3 Z- scores	13.8% (11.6-16.0)	11.5% (8.4-14.6)	16.3% (12.8 – 19.8)

Typically, 96% of the primary care givers were the mothers of the child. The mean age of the primary care givers was 31.7 years. Marginally higher numbers of pregnant/lactating women appear malnourished than those not pregnant or lactating but the comparison shows no statistical significance. The rates for pregnant/lactating women and for non-pregnant/lactating women are not statistically different from any of the other regions. It can be assumed that a similar amount of caregiver malnutrition is present in each region.

**Table 11: Kouliab malnutrition of caregivers**

	Pregnant/Lactating women	Non-pregnant/lactating women	All women
MUAC <22.0cm	8.7% (5.2-12.3)	7.1% (4.7-9.4)	8.1% (5.7-10.6)

### C. RRS Region

A total sample of 921 children between the ages of 6 and 59 months was analyzed. In 3 out of 5 age groups boys outnumber girls. The overall percentage of boys is 53.1% compared to 46.9% of girls.

As with all other regions, a higher prevalence of malnutrition is observed in the younger age group (6-29 months). Statistical tests show that the risk of global malnutrition is higher in the younger age group with these children 1.79 times more likely to be malnourished). The higher risk of malnutrition in the younger group appears to be of a degree more or less equivalent in the areas of RRS, Sughd and Kurgan Teppe, with a slightly increased risk in Kouliab.

**Table 12: RRS global and severe acute malnutrition by age group (z-score)**

	6-59 months	6-29 months	30-59 months
Global acute malnutrition W/H < -2 Z-scores	16.1% (11.9-20.3)	19.6% (15.2-24.0)	11.0% (5.3-16.7)
Severe acute malnutrition W/H < -3 Z-scores	4.0% (2.3-5.8)	5.6% (3.4 – 7.7)	1.7% (0.0-3.5)

**Table 13: RRS global and severe acute malnutrition by age group (% of the median)**

	6-59 months	6-29 months	30-59 months
Global acute malnutrition W/H < 80% of median	11.3% (8.1-14.5)	13.9% (10.0-17.8)	7.6% (3.6-10.1)
Severe acute malnutrition W/H < 70% of median	1.9% (1.0-2.8)	2.6% (1.3-3.9)	0.8% (0.0 – 1.8)

As with the z-score analysis a significant relationship is found between age and malnutrition with children 6-29 months being at an elevated risk of malnutrition in comparison with those 30-59 months.

For RRS, 944 children were included in the analysis of Height for Age (stunting). Chronic malnutrition is high and comparable to the Kouliab and Kurgan Teppe regions; though significantly lower than the extremely high rate found in Sughd.

**Table 14: RRS chronic malnutrition by age group**

	6-59 months	6-29 months	30-59 months
Global chronic malnutrition H/A < -2 Z- scores	32.8% (28.2-37.5)	31.3% (25.2-37.3)	36.3% (30.1- 42.6)
Severe chronic malnutrition H/A < -3 Z- scores	12.7% (9.9-15.5)	12.5% (8.6-16.4)	13.5% (9.8-17.2)

The situation of primary caregivers in RRS is similar to the other regions. In 99.6% of cases the primary care giver was the mother of the child. The mean age of primary care givers was 29.8 years.

As shown below, there is a significant difference in malnutrition rates between pregnant/lactating women and non-pregnant/lactating women. In these cases pregnant/lactating women are shown to be at a greater risk of malnutrition than non-pregnant/lactating women

**Table 15: RRS malnutrition of caregivers**

	Pregnant/Lactating women	Non-pregnant/lactating women	All women
MUAC < 22.0	13.1% (9.5-16.8)	8.5% (5.5-11.4)	11.2% (8.2-14.2)

#### D. Sughd (Leninabad) Region

A total sample of 908 children between the ages of 6 and 59 months was analyzed. For the total sample, boys account for 51.4% and girls for 48.6%.

There is no observed difference in severe malnutrition between the younger and older age group. However there is a large difference in global malnutrition with children of 6-29 months being at a higher risk of malnutrition. Similar reasons apply as have been reported for the other regions.

**Table 16: Sughd global and severe acute malnutrition by age group (z-score)**

	6-59 months	6-29 months	30-59 months
Global acute malnutrition W/H <-2 Z-scores	15.4% (11.8-19.0)	19.8% (15.1-24.6)	10.6% (6.7-14.5)
Severe acute malnutrition W/H < -3 Z-scores	3.4% (2.1-4.8)	3.5% (1.8-5.2)	3.5% (1.3-5.6)

**Table 17: Sughd global and severe acute malnutrition by age group (% of the median)**

	6-59 months	6-29 months	30-59 months
Global acute malnutrition W/H <80% of median	11.3% (8.3-14.4)	14.7% (10.6-18.9)	7.7% (3.9-11.5)
Severe acute malnutrition W/H < 70% of median	1.8% (0.8-2.7)	1.6% (0.5-2.8)	2.0% (0.4-3.6)

A substantially higher prevalence of global malnutrition is found in the 6-29 months age group. This group is at higher risk of malnutrition. Only a small difference is seen in severe malnutrition between the 2 groups.

For Sughd Region, 894 children were included in the analysis of Height for Age (stunting). This region found the highest rate of chronic malnutrition in the survey and illustrates a serious problem. As previously stated, stunting illustrates a historic nutritional problem that cannot be addressed in the present. Addressing the causes of acute (wasting) malnutrition may help towards lowering future rates of stunting if the causes are related. Further assessment is required in order to identify and address the causes of chronic malnutrition.

**Table 18: Sughd chronic malnutrition by age group**

	6-59 months	6-29 months	30-59 months
Global chronic malnutrition H/A <-2 Z- scores	43.8% (39.6-48.1)	42.3% (36.9-47.8)	45.7% (40.2- 51.2)
Severe chronic malnutrition H/A < -3 Z- scores	18.6% (15.3-21.8)	18.0% (13.7-22.3)	19.3% (15.7- 22.8)

The sample size was only 894, a high number of records being excluded because of missing or erroneous dates of birth. This sample must therefore be interpreted with caution, as the recommended minimum sample size of 900 children was not achieved. The results may therefore not be suitable for extrapolation to the child population of the Sughd region, but just representative of those surveyed.

The primary care giver was the mother of the child in 99% of the cases in Sughd Region. The mean age of primary care givers was 29.2 years. The findings of malnutrition in primary caregivers are consistent with the other regions.

**Table 19: Sughd malnutrition of caregivers**

	Pregnant/Lactating women	Non-pregnant/lactating women	All women
MUAC <22.0	10.4% (7.7-13.2)	10.3% (7.5-13.1)	10.2% (8.1-12.3)

#### E. Regional Summary

In summary, it can be seen from the data that the nutritional situation (please refer to Annex 4 for clarification of terms relating to nutritional status) is deteriorating in all regions since the previous nutrition surveys of 1999 and 2000. The most at-risk remains the 6-29 month age group in each region and this is likely to be related to breastfeeding and weaning practices, and diarrhea, as found in previous analyses. The excessive risk in this age group compared with the 30-59 month age group is less pronounced than in last year's survey, suggesting that other factors causing malnutrition are more in evidence this year, and are affecting more children in the older age group. These factors are most likely to be linked with household food insecurity and a consequent reduction in food consumption. These factors will be explored in the following sections.

Caregiver malnutrition is in evidence to a considerable degree in all regions, using a MUAC cut-off of <220mm. This raises concerns as to the general food security situation in the regions studied and will need to be closely monitored and appropriately addressed to prevent further deterioration. The significantly higher rates of malnutrition noted among pregnant/lactating women over those not pregnant/lactating in the Kurgan Teppe and RRS regions are of concern, for both the health and nutrition status of the women and of the infant. Pregnant women who are malnourished are at a higher risk of complications during the birth and of bearing babies of low birth weight.

## VI. CAUSAL FACTORS ASSOCIATED WITH MALNUTRITION

The bi-variate and multi-variate analyses clearly show which factors are most associated with nutritional status. Some are contrary to what might be expected and these are discussed in further detail.

The multivariate analysis is most important in that it “controls” for the influence of multiple causal factors. It progressively eliminates factors of effect, leaving only the most critical. However, the following factors proved to have varying degrees of influence on the state of malnutrition as reported in the bi-variate analysis.

#### A. Household Food Security

Food security can be defined as...“Access by all people at all times to enough food for an active and healthy life” (World Bank 1986). In this case, household food security includes the extent to which households have the capacity to acquire sufficient food, their access to food and their provision of appropriate foods for children and their caregivers.

The following sections consider the factors that have an influence on household food security in the surveyed areas of Tajikistan.



## B. Access to Land

One of the more curious findings is that there is more chronic malnutrition among families who had access to land to cultivate in 2001 than those who did not have access to land. The critical issue appears to be related to the quality of that land, and the possibilities for irrigation. About three quarters of the Tajik population live in rural areas and their most important economic activity is agriculture. Few alternative income-earning opportunities are available in rural areas. For this reason access to sufficient land of good quality is an extremely important determinant of the food security of households. Households are traditionally reliant on agricultural production and successful harvests of crops to ensure dietary sufficiency and variety.

The table below illustrates the percentage of households in each region having access to one or more of the four types of land tenure described below and the overall average area that a household has. The table presents the totality of households surveyed, including many urban households, thus explaining some of the relatively low land ownership figures in some regions.

**Table 20: Percentage of households with land and average area per household**

Region	% households with land	Average Area (Ha)
KT	91.0%	0.22
Kouliab	85.5%	0.58
RRS	52.8%	0.36
Sughd	74.7%	0.17
All regions	75.9%	0.33

Four types of land were considered for each region in this analysis and are presented below.

### 1. Kitchen Gardens

Kitchen gardens are relatively small plots of land adjoining the house, which are used largely for growing crops for household consumption, such as wheat and maize as well as fruit and vegetables. Although small, they represent a major food security resource in Tajikistan. The Tajikistan Living Standards Survey estimates that these plots account for over half of total family in-kind and cash income.

The table below illustrates that in Kurgan Teppe most households have a kitchen garden, whilst in Kouliab and Sughd around two-thirds of the households have this type of land. Notably in Kouliab and Sughd regions kitchen gardens are on average smaller than in Kurgan Teppe and RRS. However, in RRS a larger proportion of households do not have kitchen gardens, primarily as this sample area includes Dushanbe city.

**Table 21: Percentage of households with Kitchen Garden and average area per household**

Region	% of households with land	Average Area (Ha)
KT	85.8%	0.11
Kouliab	66.2%	0.07
RRS	38.1%	0.11
Sughd	64.3%	0.08

## 2. Dekhan Land

Dekhan land is land that previously belonged to the kolkhoz<sup>8</sup> which has been distributed to independent farmers. These farmers do not have legal ownership, but full hereditary rights over the land. The allocation of this land is governed by farmers' ability to pay unofficial charges and so, as can be seen from the table below, only a very small percentage of households have such land.

**Table 22: Percentage of households with Dekhan land and average area per household**

Region	% of Households with land	Average Area (Ha)
KT	1.1%	0.34
Kouliab	1.8%	2.91
RRS	5.9%	1.08
Sughd	8.7%	0.18

Estimates of the size of dekhan holdings in this survey differ from other studies<sup>9</sup>. This survey reported smaller holdings.

## 3. Kolkhoz Lease Land

This land is provided on conditional lease to households. Usually conditions involve tenant farmers producing a pre-arranged quantity of cash crop, such as cotton, that must be returned to the kolkhoz. They may often also plant a small area of their plot with crops of their choice. This land is generally of poor quality. The lease is usually short term and tenants are therefore not inspired to work to improve its productivity and quality.

As can be seen from the table below, prevalence of families with access to kolkhoz land is highest in Kouliab and Sughd regions and low in Kurgan Teppe and RRS. The average area of kolkhoz lease land is much lower in Sughd than in any of the other areas.

**Table 23: Percentage of households with Kolkhoz lease land and average area per household**

Region	% of Households with land	Average Area (Ha)
KT	14.4%	0.31
Kouliab	36.1%	0.93
RRS	6.3%	0.77
Sughd	23.6%	0.10

## 4. Presidential Land

Presidential land distributed by the government to households through the local Hukumats. Households with influence and good contacts once again received the best lands. The lands are not owned by the households working them and can be reclaimed at the discretion of the kolkhoz leaders.

The table below illustrates that Kouliab has the highest prevalence of households with access to Presidential land, followed by Kurgan Teppe.

<sup>8</sup> Under the previous Soviet system, kolkhozes were collective farms. These were partitioned and privatised into Dekhan farms. Dekhan farmers inherited the debt that came along with the kolkhozes.

<sup>9</sup> "Land Reforms and Farm Restructuring in Transition"; Yousuf Kurbanov, AAH, 10/2000.

**Table 24: Percentage of households with Presidential land and average area per household**

Region	% of Households with land	Average Area (Ha)
KT	37.3%	0.14
Kouliab	40.3%	0.13
RRS	18.0%	0.24
Sughd	23.9%	0.11

C. Land ownership and malnutrition

The AAH analysis found that for rural areas of Sughd, children in households working on kolkhozes, but with no private land are at greater risk for malnutrition. Of those without land 22.0% were malnourished compared to 14.7% of those in households with private land. It would appear that in rural areas there are few alternative sources of income for households with no land and they are therefore poorer and more at risk.

In the urban areas of Kouliab region an association was also found between land ownership and malnutrition of children: of households without land, 27.9% of children were malnourished, of those with land, 14.6% of children were malnourished. The main sources of income for those with no land are regular job and trading. Experience suggests that those with a regular job are infrequently or poorly paid.

D. Quality of Land

Families with access to land but no irrigation or malfunctioning irrigation were at higher risk for acute malnutrition among children. Irrigation and salinity of the land continue to constitute two major problems to soil quality and productivity.

Kitchen garden land is often the most important type of land for household production of vegetables and is the predominant land type that households have access to. Analyses of survey data revealed that the percentage of kitchen gardens with a functional irrigation system ranged from 36.3% in RRS to 63% in Kouliab. In RRS and Kouliab a quarter of households had no irrigation in their kitchen gardens, while 12-46% of households in all areas reported having irrigation systems that were not functioning well.

The main problem with most irrigation systems is the lack of upkeep over the past 10 years. The infrastructure of many canals and drainage networks are in dire need of maintenance. Some have collapsed entirely, while others have become blocked with sediment and rubbish. Pumping systems have broken and have not been repaired, as the resources to do so are not available.

Productivity on non-irrigated land is significantly lower than on irrigated land, principally due to the relative water deficiencies. During current drought conditions, farms that are rain fed face serious production risks.

E. Salinity

Salinity remains a major problem in all 4 regions and on all types of land. Around 50% of households with kitchen gardens reported that salinity was a moderate or serious problem. The worst areas were Kouliab where 12.5% reported a serious problem and 43.2% a moderate problem, and Sughd with 15% reporting a serious problem and 32% moderate problem.

Presidential lands showed similar figures for salinity and irrigation problems. Irrigation was poorer still in Kolkhoz lands and salinity was comparable or worse.

The salinity of the soil has been attributed in part to intensive irrigation in the past combined with inefficient application and drainage<sup>10</sup>. Water logging and salinization have compounded to an extent where cultivation of crops has become difficult or impossible. These reporting rates of salinity of the soil are of immediate concern. The extremely high proportion of households experiencing a problem of moderate salinity in their soil is likely to worsen in future years if the problem is not confronted and measures taken to prevent the further degradation of the soil.

#### F. Household Food Production

Household food production was investigated in this survey to provide information for comparison with the previous two years' surveys and to analyze to what degree household production can contribute to household food needs.

Data was collected on the different staple foods of wheat, maize, rice, potatoes as well as for fruit and vegetables. However the analyses presented here focus largely on the production of wheat, as this is the primary staple food in Tajikistan. WFP reported that wheat accounts for 84% of the area under cereals.

The table below illustrates average wheat harvested per household and per household member. It is notable that the National Nutrition Survey of 1999 documented average wheat harvest per household member for wheat producing households to be 90.9kg. This year's survey shows roughly half that is being harvested. The results of this year are comparable to those of last year where a range of 35.3-51.4kgs was documented across the regions of Tajikistan.

**Table 25: Average wheat harvest per household with predicted coverage in months**

	Average household size*	Average wheat harvest per household (kg)	Average wheat harvest per household member (kg)	Coverage (months) of the average wheat harvest
Kurgan Teppe	7.4	345.44	46.68	3.9
Kouliab	9.1	431.85	47.46	4.0
RRS	7.7	355.27	46.13	3.8
Sughd	6.3	276.04	43.82	3.7

\* Average household size excludes children < 1 year

Kouliab had the highest average wheat harvest per household with Sughd having the lowest. This is in line with the proportion of kitchen gardens with working irrigation systems. However, due to differences in average household size in the regions, the length of time stocks will last is roughly the same for all.

Households were asked how long their wheat stocks would last. Results were very similar for all regions with households reporting that on average their wheat stocks were sufficient for 3.1 to 3.4 months. In the table above a calculation has been made for the length of time the harvested wheat would last based on cereal needs of 400g/person/day. The calculation shows a longer duration than that suggested by respondents but cannot take into account that some harvested wheat may be sold.

Some respondents of the survey reported harvests of other crops. A combined analysis of the regions showed that 18.8% of households harvested some maize (an average of 170.8kgs), 9.3% rice (average of 223.8kg), 19.7% potatoes (mean 237.9kg), 29.9% vegetables (mean 119kgs) and 26.7% fruit (mean 141kgs).

<sup>10</sup> Action Against Hunger-UK Water Quality and Household Hygiene Survey, Tajikistan 2000.

### G. Main Sources of Wheat

Over two-thirds of households reported purchasing some wheat with cash. This ranged from 63.3% in Kouliab to 88.6% in RRS households. Household production accounted for between 8.1% in RRS to 31.8% in Kouliab. A combined analysis of all regions showed that 92.3% of households reported purchasing some wheat. From the information provided from the questionnaires, it was not possible to make conclusions as to the relative contribution of different income sources of cash used to purchase food. However, the major income sources were found to be: unskilled labor, regular employment (although payment is currently very erratic), firewood collection, petty trading, and to a lesser extent, remittances and asset sales. Illicit trading was also felt to be a significant income source for some families, although this was difficult to ascertain.

### H. Livestock

Livestock provide an important source of food products including milk, cheese, yogurt, eggs and meat. They are linked with economic status and their produce can be used for feeding the household or sold to generate income.

With the onset of winter, however, milk yields are reduced and fodder becomes scarcer. This creates a difficulty for poor households who may find that the economic burden of keeping an animal over the winter outweighs the benefits and they are pushed into selling their remaining livestock assets.

71% of households own livestock in Kurgan Teppe and in Kouliab, 63% in Sughd and 53% in RRS.\*(livestock incl. poultry, donkeys).

The tables below illustrate the distribution of livestock in the 4 regions analyzed.

**Table 26: Cow ownership and sale all regions**

Region	% households with cows	Average no. cows owned	% of cow owners who sold a cow / calf in the past 12 months
KT	53	1.6	31
Kouliab	62	1.8	34
RRS	45	1.7	27
Sughd	50	1.4	27

**Table 27: Goat and sheep ownership and sale all regions**

Region	% households with goats	Average no. goats	% HH who sold goat in past 12 months	% households with sheep	Average no. sheep	% HH who sold sheep in past 12 months
KT	13	4.7	33	11	3.6	30
Kouliab	17	2.8	17	13	2.6	17
RRS	16	3.5	14	10	3	19
Sughd	15	3.5	27	19	3.1	28

Chicken ownership ranged from 23% of households in Sughd to 49% households in Kurgan Teppe. The average number of chickens owned was 5 in each region.

It is hard to compare the results of this year's survey with those found last year due to the differing delineation of regions. However, there does appear to be a trend towards decreasing livestock ownership and numbers owned per household.

Analyses of livestock sold in the past year showed peaks in the period of August-October 2001. 47.8% of households who sold one or more cows during the year in Kouliab sold at this time; In RRS 41% of cows sold were sold in these months, 60.8% of goats and 61.1% sheep; in Sughd 43.1% of the cows sold were sold in Aug/Sept/Oct, 52.7% goats, 58% sheep, 60% chickens and 66.6% donkeys.

This is indicative of the poverty of households who could not afford to feed their livestock over the winter, or who could not source winter fodder and instead sold the animals in advance. Once winter arrives the price of livestock falls so it is preferable to sell at the end of summer.

No significant relationships were found between livestock ownership and malnutrition in Kurgan Teppe, RRS or Sughd. However in Kouliab, an association was found that showed that households who do not own livestock were 1.6 times more likely to have a malnourished child.

The relationship was examined further and revealed that cow ownership is the most significant; households without cows had a 1.57 times greater risk of having a malnourished child than households that owned at least one cow. Kouliab has the highest number of cows per household of all regions and it could be that households in this region are generally more dependent on livestock for their own consumption of dairy products or for sale of produce and household income.

#### I. Main Income Sources

Regular employment is the most common main source of income for all regions except Sughd, where contract labor is more prevalent.

For the past 2 years, the surveys have reported that the three most important sources of income have been waged work, contract labor followed by sale of own food produce. In this survey the first two main sources are the same but the third is petty trading. Sale of own food produce remained high in Kurgan Teppe region with 16% of households reporting it as their main source of income, high in Sughd with 14.3% but very low in Kouliab and RRS with only 7.4% and 7.7% respectively. This is likely to be an effect of the poor harvest.

The table below illustrates the main source of income reported by households in all four regions combined for this year in comparison with results from 2000 and 1999.

**Table 28: Sources of cash income: 2001, 2000, and 1999 surveys**

Source of Cash Income	% of HH main income source 2001	% of HH main income source 2000	% of HH main income source 1999
Regular job	37.7%	36.3%	27.2%
Contract labor	16.0	20.1	18.9
Sale of own produce	11.4	17.0	13.2
Petty trading	11.8	2.9	12.5
Government stipend	5.3	7.8	3.2
Sale of assets	4.7	4.6	1.5
Sale of wild produce	0.91	1.3	11.5
Remittances	5.9	6.5	0.8
Sale of food aid	0.1	0.3	3.0
Loan/credit	0.9	0.5	5.3

Families who are selling assets to buy food are more likely to have children with low weight for age. Sale of assets was highest in Kurgan Teppe (8.2%) and Sughd (5.7%) and lowest in Kouliab (2.9%) and RRS (1.7%). Remittances were lower than reported last year but highest in Sughd (9%) (7.6% in RRS; 3.3% in Kouliab and 4.3% in Kurgan Teppe). It is likely that the greater relative importance of remittances in Sughd is related to the reduction of work opportunities in the region due to the closure of many industries in recent years. The location of this region is more suitable than the other regions for people to cross the border to Uzbekistan or Russia to find work and be able more easily to send back remittances to the family. Increasingly this is being used as a coping strategy in the region. In other regions it is a less important source of income for households as they are further from borders and it becomes more problematic to send money back.

Sale of wild produce appears to have dropped a little further from last year. Whereas in 1999 it appeared to be a much more prominent source of income for households, now it is almost negligible. It is possible that this figure for 1999 is an over-estimation, as it seems unlikely that such a high percentage of households would rely on wild foods as their main source of income.

An analysis of all regions combined revealed higher rates of malnutrition among households living in peri-urban areas than those living in rural or urban areas. The distinction of areas into rural, peri-urban or urban was made at the discretion of the survey team for each cluster surveyed. Only 10% of the total sample was reported as living in a peri-urban area, but 23% of those households were found to have a malnourished child. This compares with 16.5% of rural households with a malnourished child and 17% of urban households. This is likely to be illustrative of families between urban and rural regions who have little or no land or livestock but equally are not benefiting from any of the advantages of urban living such as trade and regular work.

#### J. Migration / Remittances

While the effect of remittances did not emerge by itself, it may be a factor among women whose husbands have migrated. Migration of men to work in Russia or Uzbekistan has been frequently mentioned as a 'coping mechanism' for families and as an increasing option for employment, as opportunities have reduced in Tajikistan in recent years. As can be seen from the table below, almost 20% of households questioned in the 4 surveys reported having a member working outside the country. The highest prevalence is seen in Kurgan Teppe (22.2%) and lowest in Kouliab (13.4%).

**Table 29: % of HH reporting a member living outside the country**

Region	% of HH reporting a member currently outside Tajikistan
KT	22.2
Kouliab	13.4
RRS	20.7
Sughd	22
All Regions	19.6

The table below looks at how long ago the household member left.

**Table 30: When did HH member leave?**

Region	KT	Kouliab	RRS	Sughd	All Regions
	%	%	%	%	%
1-3m ago	18.3	13.6	10.7	20.5	16.1
4-12m ago	48.1	51.7	56.9	54.7	52.8
1-3yrs ago	18.8	25.4	20.3	19.5	20.5
>4 yrs ago	14.9	9.3	12.2	5.3	10.7

Of those households who reported a member leaving the country, those who have left in the past year represent between 65% and 75% by region of the total numbers who have left. This suggests that migration has increased substantially this year and may reflect a worsening employment and food security situation for households. However, it is difficult to make conclusions about trends in migration, as many of those who migrated three or more years ago have since returned, and we do not know whether or not the recent migration is permanent.

It can be seen in the analyses of main sources of income that remittances account for between 3.3% and 9%. The finding supports this data that in all regions with the exception of Sughd, the majority of people who have left the country do not send back funds. In Sughd region where remittances were reported as the main source of income for 9% of households, only 36.4% of migrants have not sent back any money. This compares with 68.7% in Kurgan Teppe, 65.8% in Kouliab and 56.4% in RRS. This was a surprising finding as popular opinion is that remittances are a significant source of income in the household economy in Tajikistan.

The Tulane analysis found that women whose husbands have migrated were at less risk for malnutrition, which was curiously at odds with the AAH conclusion that found no relationship. However, as many of these migrants have only left relatively recently the longer-term effects may not yet be obvious. With a husband gone it may mean mothers spend more time working outside the home, leaving them less time for childcare. However, the Tulane analysis found that women who work away from home have better nutritional status. This may be due to increased income for the family, cash income, or some access to food in the workplace. Surprisingly, women who have less than 3 children and who live in households of less than 6 people were at higher risk than those with more children or who live in larger households. Often, when a male head of household migrates, his nuclear family moves in with the extended family.

#### K. Household Food Consumption

The quality of the household diet can be a proxy indicator for the adequacy of the food intake of the child, although caution should be taken as what the family eats is not necessarily what the child eats. While 3 meals a day is adequate for adults, it is not for children aged 9 months and above. It is also an outcome indicator of households' ability to produce or purchase adequate food. In recent years both the quality and quantity of the family diet are reported to have declined in Tajikistan as a result of the political and economical changes in the country and the successive poor harvests.

Data on both quality and quantity of the household diet is notoriously difficult to collect and measure accurately. This is partly a problem of recall combined with the sensitive nature of the information. A further issue is that qualities of particular foods vary in themselves depending on a host of factors related to production, preparation and consumption.



The survey did not attempt to collect information on portion sizes but some tentative conclusions can be drawn from the data obtained which is concerned with meals eaten per day and frequency of consumption of the different food groups.

#### 1. Quantity in the family diet

In times of food shortage a household is likely to reduce the number of meals consumed per day to help cope with the lack of food available. The table below illustrates how many meals per day are currently being consumed by the sample:

**Table 31: Number of meals consumed per day**

	KT	Kouliab	RRS	Sughd
No. meals	%	%	%	%
1	0.4	0.7	0.7	4.1
2	1.7	2.3	6.4	13.3
3	95.5	95.4	86.2	76.6
4+	2.4	1.6	6.7	6

It is notable that a far greater percentage of households in Sughd are eating fewer meals per day than in the other 3 regions. 17.4% of households in Sughd only eat 1 or 2 meals per day. This compares to 2.1% in Kurgan Teppe, 3.0% in Kouliab and 7.1% in RRS. In Sughd a significant association was found between eating less than 3 meals per day and child malnutrition. The low harvests per household member and decreased income earning opportunities due to closure of industries may be related to this finding.

#### 2. Quality of the family diet

An investigation of the quality of the family diet was attempted from the data. Adequate nutrition does not depend solely on eating sufficient calories to meet energy needs. The quality of the diet consumed is of vital importance for the body to be able to perform functions of growth, immune response and to be able to efficiently convert the calories eaten for energy. Protein is an essential component of the diet to promote growth, and the vitamins and minerals in fruits and vegetables are vital for health and a well functioning immune system. For this reason households' consumption patterns of the different food groups was explored.

#### 3. Consumption of dairy products

Dairy consumption was the only food category that emerged as truly significant. Since consumption of dairy products more than once a week was shown to be related to better nutritional status, further analysis is being done to determine whether this increased dairy consumption is due to either higher family income, which enables purchase, or to ownership of cows or goats. Over one third of households in each area eat dairy products less than once per week. This is worst in Sughd where 46% of households are consuming dairy products less than once a week. Dairy products are important for young children for the high quantities of calcium they provide for bone growth. They are also a rich source of protein.

#### 4. Consumption of staples, fats and oils

99.4% of households reported eating a staple food on a daily basis. The majority of households consume oils daily in their diet. The lowest being once again Sughd where 7.7% consume them less than once a week. Whilst a staple food is the primary energy provider for the body, fats and oils are essential for adequate absorption of vitamins and act as reserve stores of energy. As the majority of households consume oils, it is important to ensure that young children are also given these foods.

## 5. Consumption of protein sources

The highest consumption of pulses is in Kurgan Teppe where 57% eat pulses daily. Only 13% of the households in Kurgan Teppe reported consuming pulses less than once a week. The picture in Sughd is very different with 44% households eating them less than once a week. Kouliab reported 41% and RRS 29%. Last year's survey found that on a national level pulses were consumed on average 2.87 times per week. It would appear then, at least in the Sughd and Kouliab regions, consumption this year is low compared with the National average of last year.

Only 4.4% of households in KT report eating a source of protein less than once a week, while 22.9% in Sughd eat protein less than once a week. In Sughd a significant association was found between low protein intake in the family diet and child malnutrition. Those households eating protein rich foods less than once a week were 1.66 times more likely to have a malnourished child than those that consume protein rich foods more regularly. However, this should be interpreted carefully, as animal protein sources are also sources of energy from fat, therefore those households where children do not consume animal proteins are more likely to have energy-deficient children. Protein is essential for healthy growth and development for young children. There appears to be a serious problem for many households in the Sughd region who cannot access sufficient protein rich foods to feed their children.

Low intakes of protein sources such as pulses, and also fish and meat, contributes to the inadequacy of the diet to meet child needs for growth. Pulses (beans, peas, lentils, etc.) are a rich source of protein, and are less expensive than meat or fish, and the inclusion of these foods in the diet should be promoted.

Meat is infrequently consumed by most households and less than once a week by 55-67% of households in the 4 regions. It is an expensive luxury food that is eaten only on occasion by the majority in Tajikistan.

There is a considerable degree of anemia in women and children in Tajikistan. This is likely to be partly related to lack of iron rich foods (e.g. meat, green leafy vegetables), copious black tea consumption, and possible associations with the use of the IUD as a contraceptive. However, in Tajikistan, as in all countries throughout the world, young children and pregnant women cannot meet their iron requirements through diet. Special programs are therefore needed to provide these groups with iron supplements / foods fortified with adequate levels of iron.

## 6. Consumption of fruit and vegetables

Fruit and vegetable consumption is highest in Kurgan Teppe and RRS with 80% and 78% of households respectively consuming them daily. In Kouliab and Sughd daily consumption of fruit and vegetables was achieved by only 52% and 48% of households respectively. Whereas 2% of Kurgan Teppe households consume fruit and vegetables less than once a week, 4% do so in RRS, 16% in Sughd and 18% in Kouliab. An issue is seen here in Sughd and Kouliab regions where it is likely that households are not consuming sufficient quantities of fruit and vegetables to keep their bodies healthy. There is a particular danger for young children who are still developing and need to consume these types of foods on a regular basis to grow well and develop a robust immune system to protect themselves from infection and disease.

### L. Morbidity of Children

While not directly measured in the survey, the incidence of illness is often related to lack of water and sanitation. The link between illness, and particularly diarrhea and malnutrition has been comprehensively explored in the Tajikistan context, and once again this survey highlights that diarrhea and other illnesses are strongly associated with the high rates of malnutrition observed.

In this survey, caregivers were asked to recall any illnesses the child had suffered from during the past month. Fever was the most prevalent disease symptom reported, closely followed by diarrhea and then cough. Some of this fever may be related to malaria, although the prevalence of malaria is low at this time of the year. Only 2.7% of the sample of all regions combined reported having had an episode of malaria in the past month. 55% of these children were in Kurgan Teppe, 25% in Kouliab, 17% in RRS and 3% in Sughd. Malaria is normally much more prevalent in the south of the country and therefore could explain some of the increased disease incidence seen in Kurgan Teppe, but it is also likely that a significant amount of the fever reported is related to infection and diarrhea diseases.

For all illnesses, the highest numbers of children affected were found in the Kurgan Teppe region. Sughd Region had the lowest incidence of all illnesses, apart from cough. Some of this difference can be attributed to the climate and higher rates of malaria and insect transmission of disease in the Kurgan Teppe region; other likely reasons are the water supply and poor sanitary conditions. Kurgan Teppe region has the largest irrigation infrastructure in the country and stagnant water in the canals provides an ideal breeding ground for malarial mosquitoes.

**Table 32: Incidence of disease over past month (as reported by caregivers)**

Region	Fever	Diarrhea	Cough	Total Illness	C.I.
RRS	39.7%	32.5%	34.9%	63.5%	58.7-68.2
Sughd	15.2%	20.0%	20.4%	40.2%	34.0-46.4
Kurgan-Teppe Khatlon	53.0%	41.5%	42.7%	75.6%	71.0-80.2
Kouliab Khatlon	28.0%	30.1%	16.9%	66.6%	62.3-70.8
All Regions	34.1%	31.1%	28.8%	61.6%	

The data from the Kurgan Teppe region show a significantly higher incidence of illness than the 3 other regions. Notably the Sughd region has a significantly lower incidence of illness than the other regions. This should be interpreted cautiously, however, as we are relying on reported illnesses by the caregiver, and this depends to a large extent on the efficacy of questioning by the interviewers.

Analysis of the total sample for all regions shows a significant association with malnutrition.

**Table 33: Illness associated with malnutrition**

Nutritional status (Z-scores)	Illness		Total
	Yes	No	
Not malnourished	1834	1230	3064
Malnourished	447	193	640
TOTAL	2281	1423	3704

RR=1.44 (95% CI 1.24-1.69),  $\chi^2$  test=22.32, p=0.000002.

69.8% of all malnourished children observed in the sample had been sick in the past month

A significant association was also found independently between fever and malnutrition. Diarrhea was defined as 3 or more loose stools per day. Diarrhea was also independently associated with malnutrition, children with diarrhea being 1.4 times more likely to be malnourished than those without. This finding concurs with that found in the nutrition surveys of the last 2 years.

**Table 34: Diarrhea and malnutrition**

Diarrhea	Nutritional Status		Total
	Malnourished (<-2 z-scores)	Not malnourished (>=-2 z-scores)	
Y	251	901	1152
N	389	2163	2552
	640	3064	3704

RR = 1.43 (95% CI 1.24-1.65),  $\chi^2$  test=23.79, p=0.000001.

39.2% of malnourished children had suffered diarrhea in the past month. The close inter-relationship between diarrhea and malnutrition is often difficult to dissect as symptoms are linked. It is very likely that a malnourished child will be dehydrated and have an impaired digestive system. Equally, frequent bouts of diarrhea and illness can lead rapidly to weight loss and malnutrition of a young child at a very sensitive stage of development. However analyses suggest that the high rates of illness and diarrhea found in this survey are responsible, along with related issues, for a high percentage of the malnutrition seen.

#### M. Breast-feeding and weaning practices

The WHO international guidelines for breastfeeding and weaning state that infants should be breast fed as soon as possible after the birth, as it is an important source of nutrients and anti-bodies for the newborn. Exclusive breastfeeding should be practiced until the infant is 6 months of age. After 6 months of age, an infant can no longer obtain all the nourishment it needs to grow and develop optimally from breast milk alone. At this age it is recommended that additional, suitable weaning foods be introduced gradually, with continued breast-feeding, as the infant makes a transition towards consumption of the normal family diet. It is advised that breastfeeding be continued until the infant is 24 months of age.

Analysis of the 4 regions shows that of the total sample only 1% of mothers never breastfed their infants.

The table below shows the percentage of caregivers who gave other fluids to their child between birth and initiating breastfeeding. Results are similar to last year's survey although appear a little lower as prevalence ranged from 25.9-65.5% in 2000. The lowest prevalence of this practice is seen in Sughd region. It is a harmful practice to feed a newborn infant with other liquids apart from breast milk. The immune system of a newborn baby is underdeveloped and the infant is therefore extremely susceptible to infection and disease.

**Table 35: % of mothers who gave fluids before initiating breast-feeding**

	KT	Kouliab	RRS	Sughd	All Regions
% who gave fluids between birth & first breast milk	35.4	44.8	44	15.1	34.9

Duration of breastfeeding is frequently associated with health and growth performance of an infant. Breastfeeding confers additional benefits beyond the period of its duration and has been linked to better health and greater resistance to infection in later childhood. Breast milk is a complete food for babies under 6 months and for this reason analyses look at the prevalence of predominant breastfeeding for the first 6 months and the percentage of mothers who give up breastfeeding before the infant reaches the age of 6 months. Additionally the table below examines the percentage of children who were breastfed until the age of 12 months or more. The continuation of breastfeeding until the end of the second year of life is a recommendation of WHO, as it is cleaner, an ideal food for infants up to six months, an excellent supplement to complementary foods beyond 6 months, and promotes a better mother-child bond.

**Table 36: Duration of Breast-Feeding**

Infants	KT	Kouliab	RRS	Sughd	All Regions
% predominantly breastfed for first 6 months	71.4	62.4	53.4	44.8	58.1
% cessation of breastfeeding before 6 months	11.2	11.5	13.3	7.6	10.9
% breastfeeding until child 12 months or more	75.2	78	73.1	77.6	76

Significant associations were found in the Sughd region and in a combined analysis of all regions between age of cessation of breastfeeding and child malnutrition. Cessation of breastfeeding before an infant reaches 6 months can be harmful if the caregiver does not have the access to and knowledge of appropriate alternative liquids for the infant. Prior to 6 months the digestive system of an infant is underdeveloped and unable process or absorb most foods. At this stage of life, a delicate balance of nutrients is required, which are ideally provided by breast milk. Inappropriate foods or fluids given to an infant at this age can rapidly lead to illness and malnutrition.

The tables below illustrate a higher risk of malnutrition for children in all regions who cease to receive breast milk before they reach the age of 6 months. This association was also found independently in the Sughd region.

**Table 37: Cessation of breast-feeding and malnutrition**

All regions	Malnutrition		
Cessation of breast-feeding	Not malnourished ( $\geq -2$ z-scores)	Malnourished ( $< -2$ z-scores)	Total
<6 months	216	53	269

RR=1.34 (95% confidence interval 1.03-1.74)  $\chi^2$  test = 4.6, p=0.03

Of the children who ceased breastfeeding before the age of 6 months 20% are malnourished. This shows that the cessation of breast-feeding and introduction of other food sources before 6 months of age is a harmful practice (as discussed above), and underlines the need to promote exclusive breast-feeding until 6 months of age, with the introduction of complementary foods only after this time, coupled with continued breast-feeding until 2 years of age.

Table 52 below shows that a high number of children (73%-78%) continue to receive breast milk at 12 months and beyond. This is a practice that is highly recommended by the World Health Organization. At the age of 6 months, an infant needs to start eating additional, specially prepared weaning foods in addition to receiving milk from the breast. However these 2 methods of feeding are complementary and there are still nutritive and protective benefits to be gained from mother's milk. Particularly in regions where there is a high risk of infection, hygiene practices are poor and water quality is poor, breast milk is a safe and protected source of nourishment. It can continue to constitute a significant part of a child's diet into the second year of life.

The table below illustrates an association in the survey between prolonging breast-feeding until the child is 12 months or more and reduced risk of malnutrition. This association was strong for the combined sample of all regions and also for the Sughd region independently.

**Table 38: Association between prolonged breast-feeding and malnutrition**

All regions	Malnutrition		
Cessation	Not malnourished ( $\geq -2$ z-scores)	Malnourished ( $< -2$ z-scores)	Total
12 months +	1614	269	1883
<12 months	485	109	594
Total	2099	378	2477

RR = 1.28 (95% confidence interval 1.05-1.57)  $\chi^2$  test = 5.77, p=0.02.

An association was found for all regions combined, that 14% of children who continued breastfeeding to 12 months and beyond are malnourished compared to 18% if those who stopped before 12 months. This underlines the benefit of continuation of breast-feeding beyond 6 months and should be promoted until 2 years of age.

The table below illustrates the prevalence of late introduction of infant foods in addition to breast milk.

**Table 39: Percentage of children weaned  
(given complementary foods for the first time) at 9 months +**

Children	KT	Kouliab	RRS	Sughd	All Regions
% introduced other foods or fluids at 9 months or more	31.5	29.4	26.8	22.5	27.6

It appears from the data that there are a relatively high percentage of children in all regions who consume only breast milk until the age of 9 months or more. At 6 months a child can no longer satisfy all its nutritional requirements through breast milk alone and begins to require additional foods. Although a considerable percentage of children do not appear to be receiving sufficient food at this important stage of their development, no significant association was found with the malnutrition observed in this survey. This finding is surprising, as it has been identified as an important cause of malnutrition amongst children in feeding centers in the Khatlon region. It is important to underline here the need to introduce complementary foods, in addition to continued breast-feeding, at 6 months of age. The data may be confounded when making comparisons of age of introduction of foods by the type of foods introduced and the amount of these foods given in relation to breast milk. Issues persist across Tajikistan as to the use of inappropriate weaning foods and introducing the infant immediately to the family diet instead of preparing more easily digestible and more nutritionally balanced meals. Although no statistical relationship was found in this survey, it is still a major cause of infant malnutrition.

A small association was found between early introduction of foods and child malnutrition when all regions are analyzed together. The introduction of foods to infants less than 6 months can put them at increased risk of malnutrition. It is dangerous to give an infant with underdeveloped digestive system inappropriate foods, and it also increases the risk of infection. Giving children sugared water or tea has been found to be a cause of malnutrition in nutritional feeding centers run by AAH-UK in the Khatlon region. Last year's survey found that 31-64% of mothers were introducing foods and fluids to their infants before the age of 6 months. This year the proportion is 42% for all regions on average with the highest prevalence of this practice in Sughd (55%). The region with the lowest prevalence of the practice is Kurgan Teppe (29%), which may reflect that the health and education messages of the NGOs working in this area are getting through.

**Table 40: Association between introduction of foods and malnutrition**

All Regions/Intro of foods	Malnutrition		Total
	Not malnourished ( $\geq -2$ z-scores)	Malnourished ( $< -2$ z-scores)	
< 6 months	1221	286	1507
6 months +	1753	340	2093
Total	2974	626	3600

RR= 1.17 (95% confidence interval 1.01-1.35)  $\chi^2$  test= 4.56, p=0.03

Dairy products are very important for young children as a vital source of protein and minerals. An analysis of the percentage of children consuming dairy products is presented below.

**Table 41: Percentage of children in the survey sample consuming dairy products\***

Children	KT	Kouliab	RRS	Sughd	All Regions
% drinking milk	68.3	82.3	78	56.9	71.5
% eating no eggs, cheese, yogurt or milk	21.9	11.8	13.5	24.8	18
% eating milk or eggs, cheese or yogurt	78.1	88.3	86.5	75.5	82.1

Again, concurring with family diet children's consumption of dairy products is worst in the Sughd region. Both Kurgan Teppe and Sughd have very high rates of children not consuming any dairy products. This has serious consequences for successful growth of these children. Both these areas showed low percentages of households owning cows and the lowest average number owned. Dairy products are not sufficiently consumed by the households in these areas, as they are not available in large quantities and are expensive.

\* Unfortunately it is not possible to report the frequency of consumption of these items, as the survey teams did not note these down in their answers.

#### N. Morbidity of Mothers

Analyses of mothers' illnesses was undertaken to see whether there was an association between illness and malnutrition of caregivers. The relationship between illness of caregivers and child malnutrition was also examined. Results are presented as a combined sample of all regions. Incidence of illness in each region was low overall.

The table below presents percentage incidence of each illness documented for the total sample of 3704 caregivers.

**Table 42: Morbidity of mothers / caregivers**

Illness	Incidence
Diarrhea	3.0%
Cough	12.2%
Fever	12.7%
Malaria	7.1%
Other	1.3%

A total of 29.9% of caregivers had at least one illness in the past month. No significant differences were noted between illnesses in pregnant/lactating women and those not pregnant/lactating. No significant association could be found between illness of caregivers and child malnutrition.

Further analysis is being done to look at the relationship of women's age to number of children as it may be that the thinness is related to being younger as well.

## **VII. OUTCOMES FROM FOCUS GROUP DISCUSSIONS**

As can be seen in Annex 3, the focus group discussions were intended to deal with a wide variety of issues pertaining to rural livelihoods. However, the reports from the actual discussions typically dealt with only a few of the highlighted issues. For this reason, meaningful discussion of many of the issues is impossible. The following brief synopsis of the group discussions is presented from a global perspective, since the findings are not sensitive enough to illustrate significant inter-regional differences.

### **A. Migration of family members / Remittances**

With regards to male migration to Russia and other CIS countries, two interesting trends in migration were observed. Firstly, the reported number of migrants this year is larger than any other year and represents a continuation of the trend over the past few years. Second, a larger proportion of migrants have remained abroad after the mainstay of work opportunities has lapsed. The main reasons appear to be the dearth of, and apparently further declining, opportunities in Tajikistan as well as the difficulties in returning home due to the temporary suspension of the international train service. They may not be earning sufficient money to send, compounded by the difficulties of transportation and options to actually send the funds. Up to 30 percent of migrants in some villages were reported to have been out of Tajikistan for more than three years.

One social cost of male migration has been that female-headed households have increased in number, with traditionally fewer options for livelihood and household food security. Popular opinion has held that a family member abroad was an assurance of some extra income in Tajik households, but the results of the survey decidedly counter this impression. Few group discussions mentioned specific proportions of female-headed families resulting from male migration but of those that did, about 15 percent of families are as a result female headed.

### **B. Costs of health care and schooling**

Field monitors were asked to collect details on the costs of health care and schooling, specifically 'informal' costs and levies. The results are surprising in that only about one-third of documented answers that were given by focus groups suggest that doctors, nurses and midwives ask for any payments for consultations. The main reason appears to be an understanding that people simply do not have the money. However, some groups did say that if they sought medical advice they would try and pay *something* to the medical personnel, although such payments were purely optional. This contrasts with a commonly held view that 'informal' charges for consultations are invariably and compulsorily levied. However, it remains the case that patients have to pay for medicines – a purely 'formal' cost – and this precludes many from completing essential treatment.

The field monitors did not ask the companion question relating to school fees at the same frequency. However, the few documented results also indicate that 'informal' payment of school fees is happening in a minority of cases.



### C. Child welfare

With regard to child welfare, about one-third of group discussions indicated that people perceive their children to be growing and developing slower than they did ten years ago. There are no records of focus groups disagreeing with this assertion; it may be surmised that it only a minority of groups discussed this issue. However, the professional observation of numerous development workers supports this perception, and it is reinforced by average food consumption analysis. Unfortunately data on child nutrition from the Soviet era is extremely hard to come by if it exists at all, so it is not possible to make comparisons here. However, these observations of poor growth of children do coincide with the rates of stunting that have been found in this survey and those of 1999 and 2000.

Few groups mentioned that children were not attending school, but neither were there strong assertions that all children attend school. The question may have been left out in numerous cases. When asked why, many answered that children did not attend school for lack of suitable clothes<sup>11</sup>.

### D. Childhood illnesses

The main illnesses of children and adults alike were said to be anemia, malnutrition, goiter, typhoid, scabies, malaria, hepatitis and influenza. Hepatitis and typhoid were said to be most prevalent in spring. Few regional differences were highlighted.

### E. Cattle ownership

Cattle ownership was reported by many focus groups to have declined over the past few years, although few specific figures were given. The overwhelming reasons cited by people selling their cattle are the need for money to buy food, and more significantly, the scarcity and high cost of fodder in winter.

### F. Food prices

Inflated food prices were cited as a major concern. A number of groups specified the degree to which prices have increased in recent years. The results were very similar and generally suggest that in 1991 a 50 Kg bag of white flour was priced at 25 Somoni and today costs 36 Somoni. Also, in 1991 the cost of potatoes was half that of wheat. Today, the cost has increased six fold. No reasons for this price evolution were given.

## **VIII. SUMMARY OF MAIN OBSERVATIONS AND ASSOCIATIONS BY REGION**

### A. Kurgan Teppe

Kurgan Teppe region had the highest rates of malnutrition, which had significantly increased since 1999. However, access to kitchen gardens was high in KT region (85.8% of households had kitchen gardens), and 91% of households had some land. Household food production in KT was higher than in RRS and Sughd, per household member. The regular consumption of all groups of foods was the best in this area. Yet the highest incidence of illness was observed in KT. The highest rate of breastfeeding for 6 or more months was observed in KT region, as was the highest number of mothers introducing foods at 9 months of age or later.

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<sup>11</sup> This is reinforced in the CARE Tajikistan baseline survey; Supporting Partnerships in Education and Training, Nov.2001. uncirculated draft.

These contradictions suggest that other factors are at work to contribute to the phenomena of malnutrition, and a more thorough examination of the data in a cross-tabulation exercise would be prudent.

## B. Kouliab

The second highest rates of global acute malnutrition (but the lowest rate of caregiver malnutrition) were found in Kouliab, where a correlation was identified between child malnutrition and both landlessness in urban areas, and non-ownership of livestock. Rates of livestock ownership in this region were among the highest, but so too was the percentage of households resorting to sale of cattle. Over one third of households surveyed in Kouliab had sold assets of some kind over the past year, yet with little global benefit for income levels (for <3% assets are main source of income). The income from the sale of own produce was less than half of that of neighboring Kurgan Teppe, the poor harvest compounded by the below-average size of kitchen gardens, and high levels of soil salinity. 10.3% of the population surveyed in Kouliab received food aid, which is less than half the national average.

## C. RRS

In RRS, access to land was lowest, compounded by the inclusion of a city area and a mountainous region. However, this did not translate into the lowest average wheat harvest. The highest levels of cessation of breast-feeding before 6 months were observed in RRS, and the lowest rate of exclusive breastfeeding for 6 months was also observed here. High consumption of dairy products was observed in RRS.

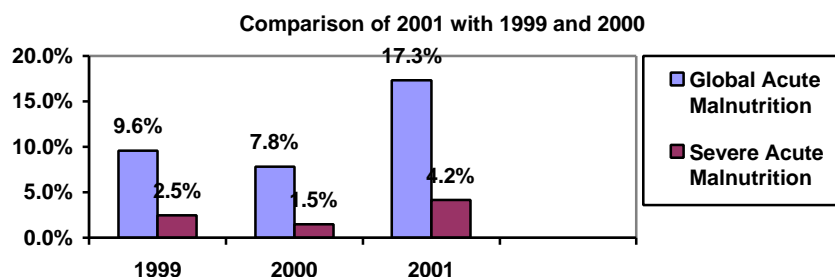
## D. Sughd (former Leninabad)

In the Sughd region, the lowest global and severe rates of malnutrition were observed, although the highest levels of chronic malnutrition were documented. Composition of family diet was found to be poor, but incidence of illness was lower here.

A major problem in Sughd is soil salinity, and the lowest wheat harvests per household were observed (although Sughd region had the lowest average household size). Remittances as a source of income were highest in Sughd region, but still not very significant (9%). Sale of assets as a coping mechanism was also high compared to other regions.

# XI. COMPARISON OF 2001 RESULTS WITH 1999 AND 2000

A negative trend towards acute malnutrition is apparent when compared with the results of the surveys of 1999 and 2000. No significant differences were identified between the 4 regions analyzed this year, suggesting that the problem of malnutrition is global.



**Table 43: Acute Malnutrition Oct/Nov 2001 (Z-score analysis)**

Region	No. Child	Global Acute Malnutrition		Severe Acute Malnutrition	
		%	CI	%	CI
RRS	944	16.1	11.9-20.3	4.0	2.3-5.8
Leninabad	908	15.4	11.8-19.0	3.4	2.1-4.8
Kurgan-Teppe Khatlon	931	20.0	16.2-23.8	5.6	3.8-7.3
Kouliab Khatlon	921	17.6	14.0-21.2	3.9	2.3-5.5
<i>All Regions</i>	<i>3704</i>	<i>17.3</i>	<i>15.4-19.2</i>	<i>4.2</i>	<i>3.4-5.1</i>

**Table 44: Acute Malnutrition Sept/Oct 2000 (Z-score analysis)**

		Global Acute Malnutrition		Severe Acute Malnutrition	
Settlement	No.Child	%	CI	%	CI
CITY	945	9.1	6.6-11.9	2.3	1.2-4.2
PERI URBAN	934	7.7	5.5-10.6	2.0	0.9-3.7
MOUNTAIN	942	6.0	4.0-8.6	1.2	0.4-2.6
PLAIN	947	7.8	5.6-10.7	1.5	0.6-3.1
VALLEY	939	10.3	7.9-13.7	2.2	1.1-4.0
GBAO	950	6.4	4.4-9.0	0.8	0.2-2.3

**Table 45: Acute Malnutrition Sept/Oct 1999 (Z-score analysis)**

Survey Area	Acute Malnutrition			
	Global %	CI	Severe %	CI
Dushanbe (City)	8.8	6.4-12.0	2.6	1.3-4.6
RRS	13.6	10.5-17.2	3.6	2.1-5.9
Leninabad Oblast	8.8	6.4-11.9	2.4	0.7-3.5
Khatlon Oblast	11	8.3-14.4	3.2	1.8-5.5
Karategin Valley	5.6	3.7-8.2	0.7	0.2-2.2
<i>All Regions</i>	<i>9.6%</i>		<i>2.5%</i>	

In 2001, the 6-29 month age group had higher rates of malnutrition and had an almost double risk of developing malnutrition than children aged 30-59 months (the combined sample of the 4 regions showed a relative risk of 1.86). This differs somewhat to the 2000 findings, wherein children 6-29 months were at 5.66 times greater risk of malnutrition than those aged 30-59 months. It would appear that there has been an important increase in 2001 of malnutrition in the 30-59 month age group. This suggests that while the issues of poor infant feeding and weaning practices and infectious diseases are still a major cause of malnutrition, the problems are being further compounded this year by a worsening food security situation. Less food is available for household consumption and older children are becoming increasingly malnourished. This finding represents an important change from last year's survey, which found the vast majority of malnutrition in the younger age group of children 6-29 months and attributed the rates largely to inadequate infant feeding practices and poor water and sanitation facilities.

A direct comparison with the year 2000 survey is difficult due to the different delineation of survey areas. However, the 2001 survey can be compared directly with that of 1999 when similar regions were surveyed. This comparison shows no significant differences in rates of malnutrition in the areas of Sughd and RRS, but a significant increase in malnutrition this year in Khatlon, in particular the Kurgan Teppe region.

The 2001 37.3 % chronic global malnutrition (stunting) prevalence is consistent with the results of the last two years: 35.9% in 2000 and 35.3% in 1999. More than a third of children in Tajikistan are short for their height and are continuously not achieving their full growth potential.

## **X. DISCUSSION**

### **A. Food Security Indicators**

While overall 75.9% of households have access to some land, the quality and quantity of that land is of serious concern. Most rural households are dependent on their kitchen garden produce for a substantial portion of their food. The majority of kitchen garden plots are very small. This survey revealed that most irrigation systems are in need of repair or replacement and salinity of agricultural land poses a serious problem.

### **B. Household Food Production**

The data shows little difference from year 2000 in the amount of wheat harvested per household member. The average wheat harvested was found to range from 276.04 in Sughd to 431.85kg in Kouliab per household. Average wheat harvest per household member differs little between regions (43.82kg to 47.46kg) and is comparable to the quantities found in the 2000 survey. However, this is a significant drop from the figure reported in 1999, which was 90.9kg per household member. The quantities found this year represent household stocks for 3-4 months at most. It is also important to note that there were families in the survey sample who planted but harvested no wheat at all. Unfortunately this data was not sufficiently recorded and cannot be included in the analyses. The average household food production figures displayed therefore may mask inequities, and may not be representative of the production levels of the poorest households.

These analyses paint a very worrying picture of people having very low stocks to carry them through the winter months ahead. A combination of factors may be responsible for the poor harvest this year, including insufficient quantities of land, the available land being of poor quality, problems of salinity, poor irrigation, and a lack of good quality seed to plant.

Production of the irrigated wheat crop in year 2001 is expected to be 18% less than the lowest output of 2000. A continuing drought and insufficient rainfall has hampered production this year. Most significantly, the precipitation in March and April, which are the key months for the wheat crop cycle, has been low throughout the country, averaging only 44% of the long-term estimate. Irregular temperature patterns have also affected growth conditions.

WFP observed a considerable decrease in irrigated wheat area in all provinces this year and an increase of cotton and other more profitable crops for which production inputs are provided by the state and purchase is guaranteed.

### **C. Livestock Ownership**

A significant relationship between livestock ownership and malnutrition was found for Kouliab region only. Cow ownership is high in the region, and traditionally households depend on the dairy/meat products for both consumption and income. Kouliab had the highest percentage of households owning cows (62%) and goats (17%) and the highest proportion of children drinking milk (82.3%) and eating milk, eggs, cheese, or yogurt (88.3%). Thus, when this food security resource is lost, there are no alternative resources to compensate.

In Kouliab households who do not own any livestock were 1.6 times more likely to have a malnourished child than those households with at least one animal. General reduction in livestock holdings across the country has been blamed on conflict and the difficulties faced by households to access grazing pastures and fodder for their animals.

#### D. Coping Mechanisms

Poor households have become increasingly marginalized from access to means of production and labor exchange. Their coping mechanisms have expanded to include more migration, more assets selling, and dependency on food aid for consumption or sale. The data and the focus group discussions suggest that households are employing an increasingly diverse range of coping mechanisms, as once more the harvest has failed and agricultural production cannot sustain them. Salaried professionals such as teachers and doctors in Tajikistan are currently being paid meager and irregular wages. Households are turning to petty trading in bazaars or outside houses and sale of assets to the point of dismantling their homes. It appears that many coping mechanisms are now exhausted. For example, many households have nothing left to sell from their homes, and migrants who leave to find income for the household elsewhere do not return. There is a lack of other employment opportunities outside agriculture, and in the Sughd region industries are closing down without other opportunities for employment opening up in their place.

##### 1. Migration / Remittances

As earlier reported, 1 in 5 households claim that a member of the household was currently working outside the country. The majority of these migrants left within the past year, and has not sent back any money since they left. Sughd region is the exception, where almost two-thirds have sent back something. This exception is possibly to do with the higher proportion that have left recently and the closer proximity of the region to Russia and Uzbekistan. For the other 3 regions, as has been confirmed in the focus group discussions, migrants often move on to a new life after leaving Tajikistan, and are not providing a reliable or considerable income to the household left behind. The consequences of this are an increasing number of extremely vulnerable female-headed households. This has been a surprising finding of the survey, as remittances were thought to be a significant income source.

##### 2. Asset-selling

Asset selling has been identified as a means for poor households to raise income when most other means have been exhausted. Assets sold included: livestock, carpets, roofing materials, furniture, electrical goods.

##### 3. Food Aid

An in-depth assessment of the receipt and impact of WFP / implementing partner food aid was not carried out as part of this survey. However, receipt of food aid was included in the household questionnaire under the sources of wheat question. 26% of the total surveyed sample (in all 4 regions) were currently receiving food aid. 46% of households surveyed in KT received food aid, 10.3% in Kouliab, 24.9% in RRS, 22.6% in Sughd. Average amounts of food aid received per household could not be calculated. Only 0.6% of the total survey population said that food aid was their most significant source of wheat. It should be noted that in 1999, sale of food aid was three times that of 2001. People tend to sell food aid when it is a surplus. Thus, it may be assumed that in 2001, food aid was consumed due to lack of other foodstuffs.

##### 4. Household food consumption

Decreasing purchasing power of the rural households, combined with distorted local consumer prices, force many individuals to substantially alter or reduce their diets, despite the fact that food and non-food commodities are generally available in the markets.

The analyses produced a clear picture that the dietary variety is poorest in the Sughd region. Meals per day were considerably less for many households in Sughd than in the other 3 regions suggesting quantity of food may be less too. This cannot be conclusively established from the survey data as portion sizes are not known, and there have been many reports of households in all areas reducing quantities of food consumed per meal. However, for all food groups studied with the exception of meat, fewer households in Sughd are managing to eat a rich protein source as frequently as in the other 3 regions. An association between low protein consumption in the household and child malnutrition was clearly established in this region, with those households eating protein rich foods less than once a week being 1.66 times more likely to have a malnourished child than those eating protein rich foods once a week or more often. It would appear that this region is suffering the most in terms of obtaining sufficient food of adequate quality at the household level, although overall malnutrition rates are marginally lower here.

#### E. Morbidity

##### 1. Child morbidity

The relationship between malnutrition and illness is well established. Fever was the most commonly reported disease symptom overall. Incidence of illnesses was greatest in the Kurgan Teppe region, where 75.6% of children were reported as having at least one illness in the past month. The incidence of disease reported for the Kurgan Teppe region is almost certainly having a serious impact on child malnutrition. The Sughd region had a much lower proportion of children reporting illness with 40.2% having been ill in the month before the survey.

This data is of particular concern for the Kurgan Teppe region and the reasons for a much higher incidence of illness here require further examination – it would be advantageous to compare this with data held in health establishments for corroboration. This survey has not looked at hygiene practices or water quality, which are key factors in disease transmission rates. These aspects of the causal analysis have been well-researched and documented in previous surveys and assessments.

##### 2. Caregiver morbidity

Illness was linked to caregivers' malnutrition, as those who had been ill had a 1.44 times greater chance of being malnourished. Fever and cough were the most common symptoms of illness reported by caregivers, concurring with that reported for their children. Malaria may be a cause of these reported fevers as it was a prevalent disease in the same month in some areas.

#### F. Breastfeeding and Weaning Practices

A high percentage of mothers give other fluids to their infants before putting them to the breast. This was highest in the Kouliab and RRS regions with 44-45% of caregivers doing so. Early cessation of breastfeeding before the age of 6 months was linked to malnutrition, as was early introduction of foods before 6 months. Continued breastfeeding beyond 12 months was correlated with a protective association against malnutrition. Many organizations are involved in health education and promotion of the optimal breastfeeding messages. There is obvious need for continuation of this work to reach all sections of the population. The following messages regarding breast-feeding and weaning of young children need to be emphasized: exclusive breast-feeding to approximately 6 months of age; continued breast-feeding after 6 months until 2 years of age, with complementary foods introduced at 6 months; meals should be provided 2-3 times per day for 6-8 month-old children, 3-4 times per day for 9-11 month-old children, and 4-5 meals per day for 12-23 month-old children. The types of food to be given to young children after 6 months of age should also be promoted; energy dense foods need to increase in the diets of young children together with increased consumption of fruits and vegetables.

## **XI. CONCLUSIONS**

Globally, the following conclusions provide the general portrait of the representative state of malnutrition in Tajikistan.

- The rates of malnutrition in all regions, amongst both children 6–59 months and their caregivers show a very worrying nutritional situation. In particular, the rates of severe malnutrition are extremely alarming and represent a significant deterioration in acute nutritional status over the course of three years;
- Breast-feeding practices, poor weaning and infant-feeding practices and diarrhea disease associated with contaminated water sources continue to be major contributing factors to acute malnutrition in young children. However, the effect of food insecurity on malnutrition has become much more significant. The number of children above weaning/breast-feeding age suffering from acute malnutrition has significantly increased since the last 2 national surveys, corroborating this conclusion;
- While access to land did not appear as a factor in itself to acute or global malnutrition, it is a concern that families who are planting have children who have not had adequate food over time for proper growth (chronic malnutrition). The role of irrigation is shown to be important for rural families to have adequate food in 2001;
- Women who work away from home have better nutritional status. This may be due to increased income for the family, cash income, or some access to food in the workplace;
- Size of household may actually be a protective factor in that the extended families are supporting each other and thus, improving some food security;
- Humanitarian assistance programs do not appear to be having a wide-reaching impact on the most vulnerable groups at risk for malnutrition, or indeed those suffering from acute malnutrition. Although around a quarter of the surveyed population was in receipt of some quantity of food aid, the amounts of food that are received may be insufficient, due to possible deviations in the distribution pipeline at the jamoat and community level. There is concern that the quality of currently distributed rations may be inadequate in both caloric value and composition.

## **X. RECOMMENDATIONS**

*The following recommendations are contingent upon joint review by the participating agencies, and may require more specification by geographical delineation:*

- Continuation, improvement and expansion of nationwide program (government, NGO and UN) to improve infant feeding practices. These should promote the following important messages about breast-feeding and weaning: exclusive breast-feeding to approximately 6 months of age; continued breast-feeding after 6 months until 2 years of age, with complementary foods introduced at 6 months; meals should be provided 2-3 times per day for 6-8 month-old children, 3-4 times per day for 9-11 month-old children, and 4-5 meals per day for 12-23 month-old children. The types of food to be given to young children should also be promoted; energy dense foods need to increase in the diets of young children together with increased consumption of fruits and vegetables.
- Conduct a review of targets in the current food distribution programs, looking at vulnerability criteria and using the outcome of this report to adjust targets in consultation with all distribution partners;
- Institute a blanket complementary ration (CSB/WSBs) for under 5's and pregnant and lactating women to include in the currently distributed general ration, as proposed in the Oxfam Food Security Survey;

- Institute a blanket complementary ration (CSB/WSBs) for under 5's and pregnant and lactating women to include in the currently distributed general ration, as proposed in the Oxfam Food Security Survey. If blanket distribution is not feasible to all these groups, the program could be targeted to children aged 6-29 months as this is the most vulnerable group in terms of susceptibility to malnutrition, and to those pregnant and lactating mothers with low BMI (less than 18) and / or MUAC (less than 22cm).
- Pulses which are currently missing from the ration should be included in the future to ensure that the universal guidelines for food rations are followed (2100 kcals – 10-12% protein and  $\geq 17\%$  fat);
- Advocate for the development of a sustainable approach to supplementary and therapeutic feeding that will build the capacity of the current health system;
- Institute targeted nutrition education as an integral part of all food distribution and school feeding activities, as is currently being carried out by at least one NGO;
- Establish a nationwide surveillance system on the order of an 'Early Warning System' that will provide regular information on health, nutrition, food security, water, etc. Dissemination of this information will allow for timely response to changes in household food security, health and living conditions;
- Advocate for continued and intensified investigation of alternative and sustainable water and irrigation technologies, with the intention of improving access to clean water;
- Advocate an action-oriented review of factors affecting access to sufficient good quality land, with special focus on female heads of households;
- At the macro level, intensify efforts in the development of agricultural initiatives for local seed multiplication, alternative agricultural inputs, desalinization technologies, etc.;
- Host a presentation of the results for the relevant ministries and agencies, to advocate for more rapid policy development and application regarding Household and Livelihood Security initiatives.
- Conduct a pre-harvest survey (April/May 2002) to re-assess the food security status of the population at the end of the hunger gap. This survey may also include a mortality survey, as proposed but not executed in NNS 2001.